

Denny to Wishaw Network Upgrade

Environmental Impact Assessment Report

Volume 3 Appendices

Appendix 10.1 Phase 1 Geoenvironmental and Geotechnical Report

May 2026



Denny to Wishaw Network Upgrade
Environmental Impact Assessment Report
Volume 3, Appendix 10.1 Phase 1
Geoenvironmental and Geotechnical Report



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Appendix 10.1

Cumbernauld Substation Extension

Denny to Wishaw Network Upgrade
Phase 1 Geoenvironmental and Geotechnical Report

Project Number: 60602788

June 2026

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Executive Summary

On the instructions of Scottish Power Energy Networks (the Client), AECOM Limited (AECOM) has carried out a Geo-environmental and Geotechnical Desk Study of the site known as Cumbernauld Substation ("the Site") as part of the Denny to Wishaw Network Upgrade Project ("the Project").

It should be noted that this executive summary does not form a standalone document and should be read in conjunction with the AECOM Geo-environmental and Geotechnical Desk Study below (Ref: 60602788).

Report Purpose	This assessment is required to support the new development's planning application for the construction of Scottish Power Energy Networks. We understand the client's reporting requirements are to assess the potential impacts from the Site on Ground Conditions, assess contamination risks and constraints in relation to the Site and determine whether additional ground investigation works are required to further characterise any identified constraints.
Site Setting and Historical Land use	The Site is currently occupied by the Cumbernauld Substation situated within the eastern edge of the town of Cumbernauld. As of the time of writing this Desk Study Report, the surrounding land use around Cumbernauld Substation is predominantly woodland with a mix of residential and industrial land uses further from the site boundary. A review of the earliest available historical maps revealed the Site to have been presumed agricultural land from 1859 until 1954, where the first electrical components were mapped within the site area. The Cumbernauld Substation is first noted within the 1970s. The area surrounding the Site has seen several phases of redevelopment. Land uses of interest within the surrounding area include quarries, refuse tips and sewage works. Existing structures and potential for historical and currently active utilities have been identified.
Contaminated Land Risk Assessment	The potential for contamination cannot be discounted based on the presence of potential contaminant sources (made ground and refuse tips on-site with the electrical substation, sewage works, railway land, quarry and lime kiln all recorded adjacent to the Site). The principal on-site contamination source is made ground associated with the development of the Site, which is of unknown provenance and composition. Contamination is likely to be present locally surrounding former quarries and refuse tips. Elevated ground gas is also considered to represent a possible viable pollutant linkage, particularly as the inclusion of enclosed buildings increases the risk of ground gas, mine gas and vapour build-up. Based on the available information and the proposed industrial development, a Moderate / Low to Moderate risk classification has been determined with respect to contaminated land.
Geotechnical Constraints	Existing information indicates a potential for significant and variable thicknesses of made ground, and poor and weak superficial deposits beneath the Site. A single historical borehole recorded peat amongst moss and sandstone boulders to 1.52m bgl. The depth to groundwater is unknown but may be shallow beneath parts of the Site. Existing historical boreholes indicate a shallow bedrock depth beneath the Site, less than approximately 3m bgl, but there is a potential for variable depth areas which have not been investigated. There is also a potential for variable strength of bedrock beneath the Site. The Site is within a Mining Remediation Authority Development High Risk Area (DHRA) associated with a recorded mine entry (an adit). There are no recorded mine workings within influencing distance of the Site but there is a risk of subsidence associated with potential unrecorded shallow underground mine workings in fireclay, limestone and subordinate coal, as well as from unrecorded mine entries across the Site.
Recommendations	A Mining Risk Assessment (MRA) is required for the site. Following the MRA, ground investigation is recommended to further characterise the ground conditions and the identified potential contaminant linkages and geotechnical constraints; support earthworks and development design, and to inform the discharge of any relevant planning conditions.

1. Introduction

1.1 Terms of Appointment

On the instructions of Scottish Power Energy Networks (SPEN), AECOM Limited (AECOM) has carried out a Geo-environmental and Geotechnical Desk Study of the site known as the Cumbernauld Substation ("the Site") located off Forest Road in Cumbernauld. The Cumbernauld Substation works form part of the Denny to Wishaw Network Upgrade Project ("the Project").

The assessment is required to characterise potential land quality constraints / opportunities, identify potential geotechnical constraints, support necessary planning and to provide input as baseline data to the Environmental Impact Assessment Report.

The proposed development plan for Cumbernauld Substation is shown on Figure 1 below (extract from Drawing 22119-BHK-CUMB-SUB-D-C-000201 in **Appendix A**). It is important to note that separate desk studies have been prepared for the individual substations and the overhead line route.

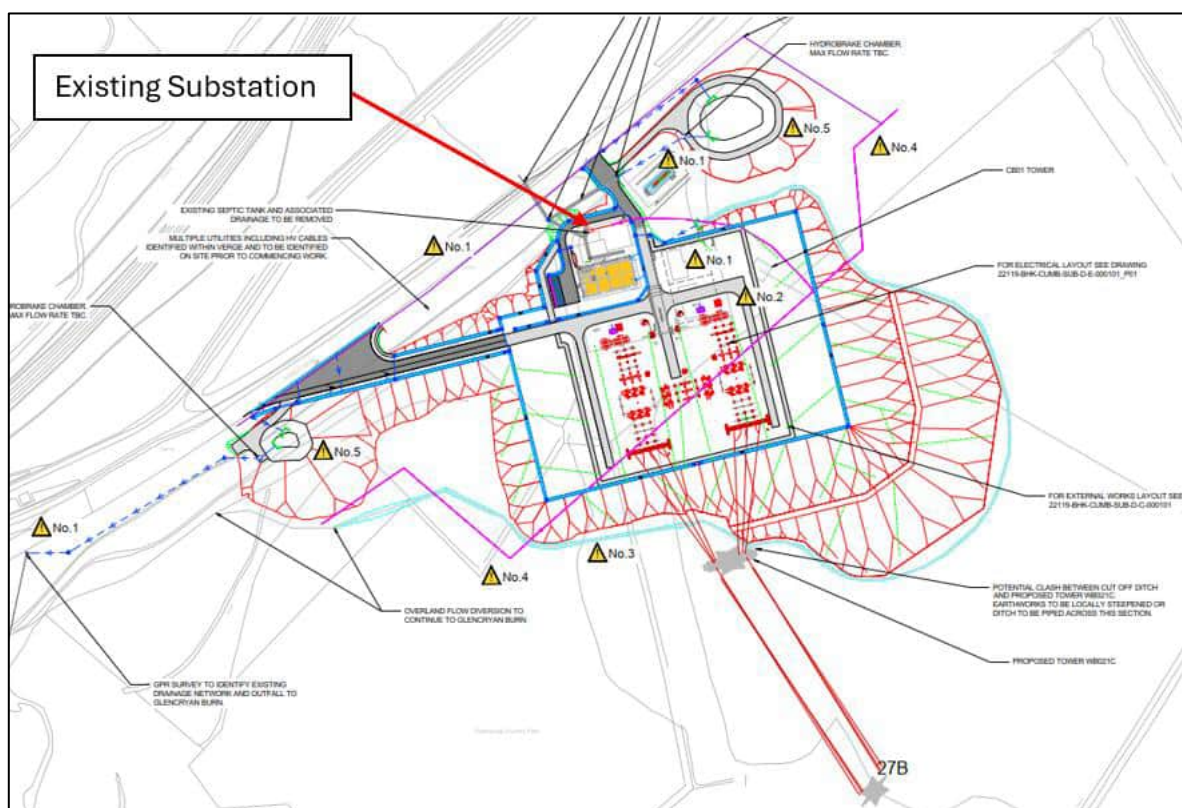


Figure 1 Proposed Development Layout of Cumbernauld Substation

1.2 Background and Proposed Development

The proposed development discussed as part of this report forms part of the scope of the works as part of the SPEN Denny to Wishaw Network Upgrade (DWNU) project.

The work associated with the overall DWNU Project includes:

- The construction of approximately 19km of a new 275/400kV double circuit overhead line (to be known as WB route), including temporary access tracks, tower compounds, site compounds, pulling positions and associated works. This is hereafter referred to as the 'New Build Overhead Line'. Upgrading the eastern circuit of three existing overhead line routes from 275kV to 400kV, hereafter referred to as the 'Upgraded Overhead Lines', including temporary access tracks, tower compounds, site compounds, pulling positions, tower foundation upgrades and associated works: ZG Route – upgrading of approximately 4km of the eastern circuit of existing overhead line between Denny North and Bonnybridge Substations; XX Route – upgrading of 15km of existing overhead line between Easterhouse and Newarthill Substations. Part of XX Route is located to the north of Glenmavis where the 'New Build Overhead Line' shall tee into XX Route, involving the dismantling of existing towers XX020 and XX021, and the construction of towers XX019A, XX019B,

XX020A and XX021A. In addition, one new tower (XX048A) is proposed to the north-east of Newarthill Substation; and (XR Route – upgrading of approximately 16km of existing overhead line between Newarthill and Wishaw Substations, including one new tower (XR001A) and span of overhead line between towers XR001A and XX048A. In addition, one temporary tower (XR001T) and two temporary span of overhead line between XR001 – XR001T and XR001T - XR002.vWorks to the existing ZD Route including the installation of two new towers, two new spans of overhead line between new towers and one new span of overhead line between existing towers, as part of reconfiguration of connections to Denny North Substation

- Works at the existing Denny North, Bonnybridge, Cumbernauld, Easterhouse and Wishaw Substations to facilitate the above overhead line works. These are hereafter collectively referred to as the 'Substation Works'.
- There are also ancillary works which form part of the Project, these are hereafter referred to as the 'Ancillary Works', and comprise the following:
 - The entire removal of existing CB Route 132kV overhead line, measuring approximately 11km between Bonnybridge and Cumbernauld, referred to as the 'CB Route Removal';
 - The undergrounding of two short sections of existing 132kV overhead line known as the 'AA Route' referred to as the 'AA Route Undergrounding'; and
 - Diversions to other SP Distribution plc (SPD) infrastructure are required as part of the Project, referred to as the 'Distribution Line Diversion Works'.

The Proposed Development planned at the existing Cumbernauld Substation and discussed in this report, consists of the following:

Permanent works

- New substation equipment including:
 - 275kV Air Insulated Switchgear (AIS);
 - Two Super Grid (275/33kV) Transformers with AIS circuit breakers;
 - Two Connection bays with Marshalling Kiosks;
 - 275kV bus section breaker;
 - 2no. new Gantries;
- Earthworks including requirement for cuttings formed in rock. Proposals are currently for a 1:3 slope with cut heights of up to between 16m and 22m and a mid-slope bench for larger cuttings;
- New access road (5.5m width), from Forest Road main road;
- One single storey new control building (including toilet, mess room, storage, office, battery room, and other electrical equipment);
- New platform to accommodate new electrical equipment (no more than 1.8Ha);
- Diesel generator;
- DNO (Distribution Network Operator) Substation;
- Car parking for up to 6 vehicles;
- 3m high palisade perimeter fencing;
- Internal footpath (2m wide);
- Internal vehicular access road (3.5m wide);
- Realignment of existing 33kV cables and overhead line;
- Storage of up to 90,000 litres of insulating oil,
- Operational lighting (only during maintenance in hours of darkness);

Temporary works

- Earthworks;
- Decommissioning and removal of two existing 132kV grid transformers
- Construction phase lighting (only during hours of darkness);

- Dismantling and removal of one existing CB tower to make space for new substation infrastructure;
- Two temporary compounds to provide office accommodation and welfare facilities during construction;
- Upgrade to telecommunications
- Dismantling and removal of existing control building

At the time of writing, the soft landscaping and cut / fill plans were not provided for review.

The proposed substation development plans have been revised during the preparation of this report. As such, an indicative proposed development maximum extent was applied to define the Site's red line planning boundary for the Groundsure report. This indicative red line planning boundary covered the existing substation as well as the surrounding forested area. Since the ordering of the Groundsure report, the site area has been revised. The red line planning boundary now extends approximately 150m to the southwest and 60m to the southeast as shown in Figure 1 above. This revised red line planning boundary has been used throughout the report. Where the Site extends beyond the Groundsure red line planning boundary, a proportionate, desk-based review applying the same assessment principles and professional judgement was undertaken and identified no features suggesting materially different ground conditions or receptors relative to the covered areas.

The proposed development plans are provided in **Appendix A**.

1.3 Planning Status

The North Lanarkshire Council web-based planning portal was reviewed to identify whether there are existing planning conditions which relate to the Site area. The only application listed within the online planning portal was for an EIA Scoping Opinion for the works outlined in this report. The application (25/00782/ECU) was submitted on the 21 July 2025 and a decision was made on the 25 September 2025.

The Scottish Government Energy Consents Unit (ECU) returned their Scoping Opinion on behalf of Scottish Ministers under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 in writing on 7th October 2025¹.

1.4 Aims and Objectives

The aim of this Geo-environmental and Geotechnical Desk Study is to assess the potential contaminated land and geotechnical risks that may impact the site.

To achieve this aim, the report has the following objectives: characterise the environmental setting and sensitivity across the site, along with the potential for contamination to exist and the pathways through which contamination may come into contact with sensitive receptors given the proposed development as a new substation.

The Geo-environmental and Geotechnical Desk Study includes the following key activities:

- To characterise the environmental setting and sensitivity across the Site, along with the potential for contamination to exist and the pathways through which contamination may come into contact with sensitive receptors given the Proposed Development as a new substation.
- Review of aerial imagery to determine the Site layout and to provide a current description of the Site and its setting within the local area.
- Review of historical land uses for the Site and surrounds with a particular emphasis on identifying potential on-site and off-site contamination sources, and potential for Made Ground.
- A review of the Site's geological (including available British Geological Survey (BGS) borehole records), hydrological and hydrogeological setting, publicly available non-coal and coal mining records and geo-environmental information to build up an understanding of the Site setting and surrounding area environmental sensitivity.
- Review of online information from the Mining Remediation Authority, along with available borehole records, to assess the mineral conditions beneath the Site and the associated risk of subsidence or unstable ground;

¹ The Scottish Government Energy Consents Unit (ECU), Appendix B – Scoping Framework, Scoping Opinion on behalf of Scottish Ministers under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, Denny to Wishaw Network Upgrade (DWNO), Scottish Power Transmission Plc. 07 October 2025

- Environmental Information Request and review relevant records held by the Local Authority Contaminated Land Officer and the Scottish Environment Protection Agency (SEPA) along with public regulatory records provided within Groundsure Reports purchased for the Site;
- Review publicly available records from consultees including (but not limited to) Historic Environment Scotland website, the Zetica bomb risk maps, UK Radon website, flooding information, the National Library of Scotland etc. to further inform the study;
- Develop a preliminary Conceptual Site Model (CSM) for the Site to identify the potential contamination sources, pathways, and receptors for consideration in the context of the potential development followed by a preliminary qualitative risk assessment for the Site;
- Summarise identified geo-environmental, land quality and geotechnical risks; and
- Recommendations for further geo-environmental and geotechnical assessments, if required.

1.5 Sources of Information

This report has been prepared using a combination of publicly accessible published records (e.g. British Geological Survey (BGS), SEPA) and other sources such as the Local Authority Contaminated Land Officer. These include statutory records and historical mapping supplied within a Groundsure Report, published geological and hydrogeological mapping, historical borehole records and observations made during the site reconnaissance.

The following bodies were consulted during the assessment:

- Groundsure Enviro+Geo Insight (ref. GS-FME-743-9E9-9AC)², dated 26 September 2025;
- Mining Remediation Authority ([Interactive Map Viewer | Mining Remediation Authority \(bgs.ac.uk\)](#)) (accessed October to November 2025);
- British Geological Survey (BGS) ([GeoIndex – British Geological Survey \(bgs.ac.uk\)](#)) (accessed October to November 2025);
- SEPA ([Water Environment Hub \(sepa.org.uk\)](#)) (accessed October 2025);
- SEPA Flood Risk (<https://map.sepa.org.uk/floodmaps/FloodRisk/Search>) (accessed October 2025);
- NatureScot ([Map | Scotland's environment web](#)) (accessed October 2025 to January 2026);
- Historic Environment Scotland (HES) ([Designations Map Search \(arcgis.com\)](#)) (accessed October 2025);
- Zetica UXO Map ([Risk Maps | Zetica UXO](#)) (accessed October 2025);
- UK Health Security Agency Radon Map ([UKradon - UK maps of radon](#)) (accessed October 2025);
- Baker Hicks Limited, 'Mining Risk Assessment, DWNO – Cumbernauld 275kV Substation', dated September 2025 (Ref: 22119-BHK-CUMB-SUB-RP-G-000100 P01);
- Topography map ([United Kingdom topographic map, elevation, terrain \(topographic-map.com\)](#)) (accessed October 2025); and
- Google Earth satellite imagery ([Google Earth](#)) (accessed October 2025).

Specific information sources are referenced throughout the document.

1.6 AECOM Report Approach

Detailed information relating to AECOM's approach to this report is included within **Appendix B**. This should be read in conjunction with the report, and contains information on the general approach to reporting, specific limitations of relevant sections and information on the approach to risk assessment utilised.

² At the time of ordering, the proposed development plans had not been finalised. The Groundsure reporting area represents a worst-case scenario covering the largest extent of the proposed development area at the time of purchase.

2. Site Information

2.1 Site Details

The site description and location details are summarised in Table 2-1 below:

Table 2-1 Site Details

Item	Summary
Grid Reference	NS 77390 74350
Size	Approximately 5.60 Ha
Address	Off of Forest Road, Cumbernauld G67 3AA.
Site Location	The Site is located within the central lowlands area of Scotland, within the eastern extent of the town of Cumbernauld. The national grid reference of the centre of the Site is NS 77390 74350 and nearest postcode is G67 3AA. The site of the proposed substation extension is located adjacent to the north, east and south of the existing substation footprint. The proposed development covers the existing substation footprint as well as the grassed and forested land to the south the existing substation. The Site generally has a fall to the northwest toward Forest Road, with a significant change in topography of a couple of meters between the forested area and Forest Road. A proposed development plan is shown above in Figure 1.
Current Use	The Site is comprised of the existing substation in the northern portion of the Site and the Glencryan Woodland within the southern portion of the Site.
Surrounding Land Uses	Surrounding land uses include: • North – Forest Road is located immediately to the north of the Site. Past Forest Road is predominately vegetated woodland. The nearest land user to the north is residential housing approximately 200m from site. • East – The surrounding land use to the east of the Site is predominately vegetated woodland. Further to the east is a housing development that is currently under construction located approximately 300m from the Site. • South – The surrounding land use to the south of the Site is predominately vegetated woodland. Further to the south is Cumbernauld Model Flying Club located approximately 650m from the Site. • West - Forest Road is located immediately to the west of the Site. Further to the west is a mixed-use industrial zone.

2.2 Site Reconnaissance

An external inspection of the Site was completed by a suitably qualified and experienced AECOM Engineer on 28 August 2025. The aim of the visit was to identify the range of activities carried out on the Site and any obvious potential sources of ground contamination or geotechnical issues. Access was not provided for the existing substation working areas, and the walkover was undertaken from publicly accessible points of the Site only. A high-level desk-based review of historic and current contamination sources was undertaken prior to the site walkover, enabling the prioritisation of any high-risk areas.

A photographic record of the visit is included as **Appendix C**.

Table 2-2 Walkover Information Summary

Item	Summary
Site Description	Access to the Site was made through the main entrance to the Cumbernauld substation off of Forest Road as well as a car park located approximately 350m southwest of the substation. The Site is predominately forested across the southern portion. This area is identified as Glencryan Woodland and has walking and access tracks through the area. The existing Cumbernauld substation is located within the northern portion of the Site and is predominately surfaced in a mix of gravel and asphalt. The substation housed a variety of electrical infrastructure and structures. Due to access to the substation being external only, the use of the structures was unclear during the walkover.
Topography	The woodland and substation has a fall to the northwest toward Forest Road, with a significant change in topography between the forested area and Forest Road estimated at 2.00m.
Waste Streams – including fly-tipped/historic waste	No fly-tipped or historic waste was noted within the Site area at the time of the walkover. Small piles of made ground consisting of concrete, brick and soil were noted around the existing substation boundary.
Known contamination issues	The existing substation and the associated industrial land activities were the only contaminative activities witnessed at the time of the walkover. No large-scale tank storage was noted at the time of the walkover. The substation housed a variety of electrical equipment including overhead

Item	Summary
	lines and transformers. The transformers were generally noted to be along the eastern boundary of the existing substation within a banded area.
Invasive Plant Species	None observed – though the survey was not carried out by a trained ecologist, and an invasive species survey is not included in the scope of this study.
Drainage	Manholes covers were noted along the boundary and within the footprint of the existing substation. Due to the external nature of the walkover, the infrastructure associated with the manhole covers could not be confirmed.
Asbestos containing materials	No Asbestos Containing Materials (ACMs) were observed during the walkover. The main substation area was built during the 1970s, as such Asbestos Containing Materials (ACMs) within building materials is likely to be a potential concern.

3. Historical Land Use

3.1 Introduction

Historical Ordnance Survey (OS) maps of the Site and the wider environs were provided in the Groundsure Map Insight Report (scales 1:2,500, 1:10,560 and 1:10,000) and from publicly accessible aerial photography and have been reviewed in this section to identify historical land use of the Site and surrounding area that may represent potential sources of contamination or geotechnical risk. Copies of these maps are presented as part of the Groundsure Map Insight Report in Error! Reference source not found..

The historical Ordnance Survey (OS) maps obtained with the Groundsure report date between 1859 and 2003.

3.2 Site and Surrounding Area History

Table 3-1 presents a summary of the main features present on and within approximately 250m radius of the Site boundary.

Table 3-1 Summary of Historical Mapping

Date/s	Key Features on-site	Key Features off site
1859 1:10,560	The Site is undeveloped and is shown as a mix of mixed wood and open field.	- An 'old limekiln' is recorded 240m southwest of the Site. - A railway labelled as Castlecary Branch is located approximately 44m north of the Site.
1897 1:10,560	An 'old level' is shown within the southwestern corner of the Site.	No changes noted in the surrounding area.
1898 1:2,500	No change shown on the Site.	- A quarry labelled as 'old' is located approximately 130m to the south of the Site. - A well is located approximately 100m east of the Site.
1899 1:10,560	No change shown on the Site.	Filtering beds are noted approximately 245m south of the Site.
1916 1:2,500	The old level is no longer shown on the Site.	No changes noted in the surrounding area.
1922 1:10,560	No change shown on the Site.	No changes noted in the surrounding area.
1954 1:10,560	Electrical pylons and overhead lines are noted to run from the southwestern corner to the northeastern corner of the Site.	The electrical pylons and overhead lines continue in the surrounding area around the Site.
1969 1:2,500	A refuse tip is noted within the southeastern corner of the Site.	- A rail tunnel is noted approximately 80m to the west. - Two refuse tips are noted to the southeast of the Site. One overlaps with the Site boundary (as noted adjacent) while the other is located approximately 100m from the Site.
1975 1:10,000	The existing Cumbernauld substation is shown within the northern corner of the Site.	Another refuse tip is noted 200m southeast of the Site.
1990 1:10,000	Electrical pylons and overhead lines are noted to the east of the Site.	- A subway track is noted immediately north of the Site. - The refuse tips to the east of the Site are no longer shown.
1994 1:1250	- The refuse tip is no longer noted to the southeast. - No change shown on the Site.	No changes noted in the surrounding area.
Latest Imagery Date: 21/5/2025 (Google Earth)	The Site boundary of the Cumbernauld Substation appears to be consistent with how it is laid out in current aerial imagery. Historic imagery dating back to December 2004 noted additional equipment and storage of materials that is currently present on site.	No changes noted in the surrounding area.

In summary, the Site has been largely undeveloped until the 1970s when the Cumbernauld Substation was first noted. Features of concern identified on site include the existing Cumbernauld Substation, a refuse tip along the southeastern corner of the Site and an 'old level' which appears to represent the entrance of a disused underground mine adit within the southwestern corner of the Site. Features of concern in the surrounding area include several refuse tips, filtering beds, the railway line, the 'old limekiln' and an old quarry all dated between the 1890s – 1990s. Cumbernauld Substation as it is shown today was completed in the 2000s.

3.3 Summary of Potential Historical Contamination Sources

This section summarises potential contamination on-site and in the vicinity associated with historical features identified in **Section 3.2**. These include:

- **Made ground** associated with the infilling of quarries and infilling/deposition of refuse tips (on-site/off-site), construction of pylon towers (on-site), construction of access roads (on-site/off-site) and construction of the existing substation (on-site). These features could have the potential for contaminants such as metals and inorganic compounds, polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbons (TPH) including benzene, toluene, ethylbenzene, xylene (BTEX) and methyl-tert-butyl-ether (MTBE), semi volatile organic compounds (SVOCs), volatile organic compounds (VOCs), sulphates, sulphides, cyanides, phenols, asbestos / Asbestos Containing Materials (ACM);
- **Electrical substation (on-site)**, with potential for contaminants such as hydrocarbons, heavy metals, sulphates and Polychlorinated biphenyl (PCBs);
- **Lime kiln (off-site)** - with potential for contaminants such as metals, PAH, TPH, acids, alkalis and asbestos;
- **Filtering Beds (off-site)** – including with potential for contaminants such as metals, inorganic ions (cyanides, chlorides, etc), organic compounds (pesticides, PCBs, etc), treatment chemicals (including calcium oxide, ferric chloride, etc), hazardous gases (methane, carbon dioxide, etc) and asbestos;
- **Railway land (off-site)**, with potential for contaminants such as TPH, PCBs, VOCs, PAHs, asbestos, herbicides; and
- **Potential ground gas generation** from made ground, refuse tips and infilled quarries (off-site).

4. Environmental Setting

4.1 Introduction

The environmental setting including the topography, geology, mining, hydrogeology and hydrology are the key factors that influence the way in which contaminants in the soil or groundwater can be transported on or off site, and also the way in which contamination can affect applicable receptors including the water environment and users of the Site.

The environmental setting of the Site has been assessed by making reference to the information sources detailed in **Section 1.5**.

4.2 Hydrology

4.2.1 Surface Water Features

The SEPA Water Classification Hub³, the Groundsure report and other publicly available sources have been reviewed to identify relevant hydrological features on-site and in the surrounding area. The hydrology of the area is summarised in Table 4-1 below.

Table 4-1 Summary of On-site and Surrounding Area Hydrology

Feature	Distance & Direction*	Flow Direction	Description
Several unnamed drains / inland rivers.	Onsite - 250m in the surrounding area.	In all directions surrounding the Site.	Several unnamed drains are located in the area surrounding the Site.
Glencryan Burn (ID: 4206).	Onsite.	West to east.	The main stem is approximately 3.2 km in length and is part of the River Carron catchment in the Scotland River basin district. The water quality is listed as 'high', while the overall condition of the waterway is 'moderate'. The overall condition of the water is expected to be 'good' by 2027.
Red Burn.	70m northwest.	South to north.	N/A

**All distance measured at closest point to site area.*

Due to the distance from the Site, the unnamed drains / inland rivers, Red Burn and Glencryan Burn are likely to be receptors as they are located on-site or within the immediate surrounding area.

4.2.2 Surface Water Abstractions / Discharges

SEPA confirmed they are not aware of any surface water abstractions recorded within 250m of the Site boundary.

4.3 Geology

4.3.1 Published Geology

The published BGS 1:50,000 scale geological map (31, Airdrie)⁴, BGS 1:10,560 scale geological map (NS77SE)⁵ and the BGS Onshore Geoindex⁶ have been reviewed along with the Groundsure Geo-Insight Report (**Appendix D**) to determine the published geology underlying the Site.

Table 4-2 Geological Succession from Published Mapping

Group	Stratum	Published Description	Approx Thickness (m)
Superficial Deposits	Till (Devensian – Diamicton) Present in the eastern corner of the Site.	"Till is unsorted and unstratified drift, generally over consolidated, deposited directly by and underneath a glacier without subsequent reworking by water from the glacier. It consists of a heterogenous	"None recorded or not applicable"

³ SEPA, Available: <https://www.sepa.org.uk/data-visualisation/water-environment-hub/> Accessed October 2025

⁴ BGS, 1:50,000 Sheet 31 (Airdrie), dated 1974.

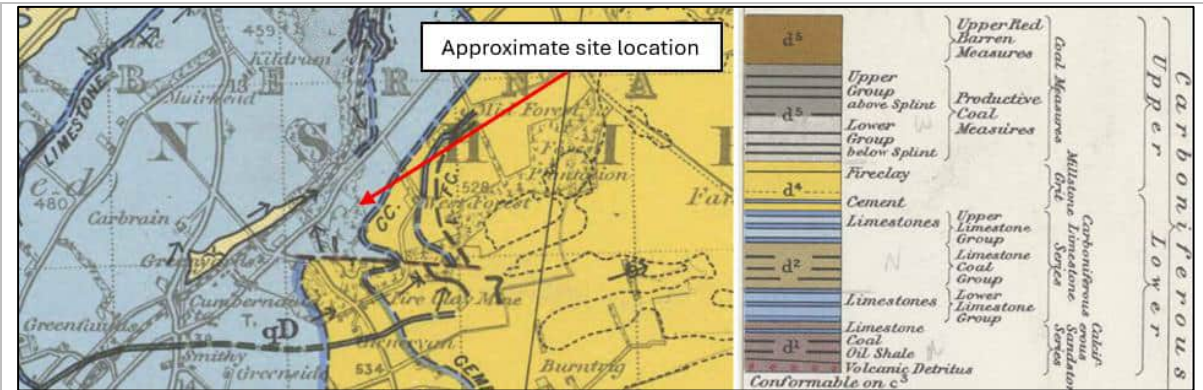
⁵ BGS, 1:10,560 Sheet NS77SE, dated 1988.

⁶ BGS GeoIndex (Onshore), Available: <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/> Accessed October to November 2025

Group	Stratum	Published Description	Approx Thickness (m)
		mixture of clay, sand, gravel, and boulders varying widely in size and shape"	
Bedrock	Upper Limestone Formation Indicated to be present beneath the entire site.	"Repeated upward-coarsening cycles comprising grey limestone overlain by grey to black mudstones and calcareous mudstones, siltstones and paler sandstones capped by seatocks and coal"	"435.3m"

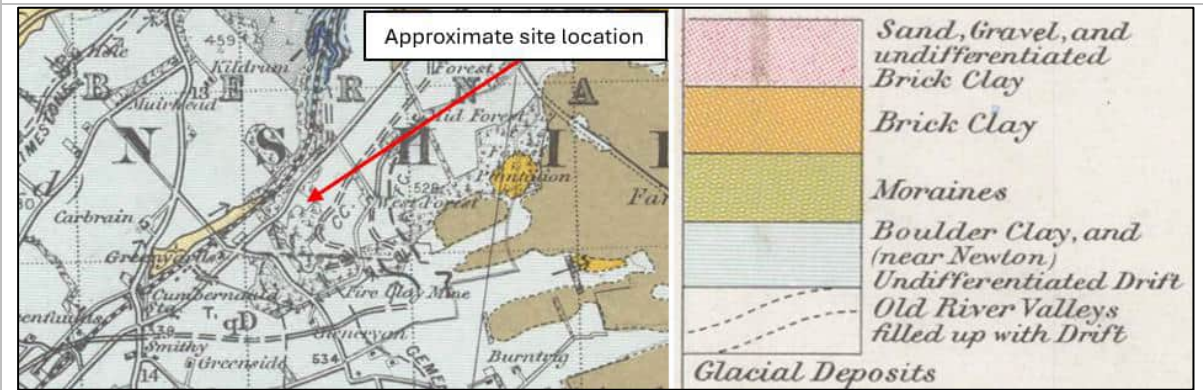
Extracts of the 1:50,000 BGS maps for the Site are included as **Figure 2** and **Figure 3** below.

Please note that the geological formation names have changed since the geological maps for the Site were published, and for clarity this report references the updated formation names as per the BGS Onshore Geoindex.



C6/02-CSL British Geological Survey © UKRI. All rights reserved.

Figure 2 Bedrock Geology



C6/02-CSL British Geological Survey © UKRI. All rights reserved.

Figure 3 Superficial Geology

There are no BGS designated areas of Artificial Ground (Made Ground) recorded beneath the Site or within the surrounding area. Although no Made Ground is shown on published BGS mapping for the proposed development or within 1 km, Made Ground is likely to be present associated with the construction of the existing substation and also within surrounding areas including infilled former quarries and pits. The Soil Map of Scotland⁷ records anthropogenically deposited artificial or reconstituted material (restored opencast) beneath the Site.

The Site's underlying superficial geology predominately comprises Till. Due to the fine-grained nature of the superficial deposits, it is anticipated that the ability for contaminant mobility is lower in comparison to more granular geologies. Areas where gravel and sands could be present may allow for preferential pathways for contaminant migration (if present).

⁷ Scottish Government, 2013. Soil Map of Scotland (partial cover), Available: https://map.environment.gov.scot/Soil_maps Accessed January 2026

BGS mapping, the Soil Map of Scotland and the NatureScot Carbon and Peatland 2016 map⁸ do not record any peat beneath the Site. A single BGS historical borehole located in the west of the Site, Ref. NS77SE5758/1 encountered what is described as peat, moss and sandstone boulders between ground level and 1.52m bgl.

The bedrock geology recorded beneath the Site is the Upper Limestone Formation. The alignment and younging direction of limestone outcrops within and around the Site suggest the dip direction of bedrock beneath the Site is towards the east. There is no information on the dip magnitude of bedrock beneath the Site.

4.3.2 BGS Historical Borehole Records

AECOM has searched the BGS historical borehole record database for relevant records relating to the Site and immediate surrounding area. 18no. boreholes have been referenced in producing this report and are summarised in Table 4-3 below.

Table 4-3 Summary of BGS Historical Borehole Records

Borehole No.	Strata	Depths	Description
NS77SE193/1 – located on-site	Superficial Deposits	0m to 0.53m bgl	Sandy Clay
	Bedrock	0.53m to 14.27m bgl	Sandstone
		14.27m to 14.35m bgl	Siltstone
		14.35m to 14.90m bgl	Mudstone
		14.90m to 15.01m bgl	Siltstone
		15.01m to 15.21m bgl	Limestone
		15.21m to 15.42m bgl	Coal
		15.42m to 22.86m bgl	Sandstone
NS77SE193/2 – located on-site	Core Loss	0.0m bgl to 3.05m bgl	N/A
	Bedrock	3.05m bgl to 14.50m bgl	Sandstone
		14.50m bgl to 14.66m bgl	Siltstone
		14.66m bgl to 16.00m bgl	Mudstone
		16.00m bgl to 16.31m bgl	Limestone
		16.31m bgl to 16.46m bgl	Coal
		16.46m bgl to 20.73m bgl	Sandstone
NS77SE5758/1 – located on-site	Superficial Deposits	0.0m bgl to 1.52m bgl	Peat, Moss, Sandstone Boulders
	Bedrock	1.52m bgl to 8.53m bgl	Sandstone
		8.53m bgl to 10.06m bgl	Blaes
		10.06m bgl to 10.21m bgl	Limestone
		10.21m bgl to 10.36m bgl	Coal
		10.36m bgl to 10.49m bgl	Fire Clay
		10.49m bgl to 16.30m bgl	Sandstone
		16.30m bgl to 16.74m bgl	Blaes

⁸ NatureScot, 2016. Carbon and Peatland 2016 Map, Available: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map> Accessed November 2025

		16.74m bgl to 17.53m bgl	Fire Clay
		17.53m bgl to 19.81m bgl	Sandstone
NS77SE5758/2 – located on-site	Superficial Deposits	0.0m bgl to 0.30m bgl	Soil
	Bedrock	0.30m bgl to 11.35m bgl	Sandstone
		11.35m bgl to 12.32m bgl	Fakes
		12.32m bgl to 12.73m bgl	Coal
		12.73m bgl to 12.88m bgl	Fire Clay
NS77SE5965/B2 – located on-site	Superficial Deposits	0.0m bgl to 0.15m bgl	Sandy Soils
	Bedrock	0.15m bgl to 2.97m bgl	Sandstone
NS77SE5965/B4 – located on-site	Superficial Deposits	0.0m bgl to 0.15m bgl	Surface Soil
		0.15m bgl to 0.76m bgl	Clay and Stones
	Bedrock	0.76m bgl to 3.04m bgl	Sandstone
NS77SE5965/B6 – located on-site	Superficial Deposits	0.0m bgl to 0.15m bgl	Surface Soils
	Bedrock	0.15m bgl to 3.35m bgl	Sandstone
NS77SE5965/B8 – located on-site	Superficial Deposits	0.0m bgl to 0.51m bgl	Mossy Soils
	Bedrock	0.51m bgl to 3.05m bgl	Sandstone
NS77SE5965/B10 – located on-site	Superficial Deposits	0.0m bgl to 0.30m bgl	Mossy Soils
		0.30m bgl to 2.06m bgl	Silty Clay
	Bedrock	2.06m bgl to 5.18m bgl	Sandstone
NS77SE5965/B1 – located off-site	Superficial Deposits	0.0m bgl to 0.38m bgl	Sandy Soils
	Bedrock	0.38m bgl to 5.94m bgl	Sandstone
NS77SE5965/B3 – located off-site	Superficial Deposits	0.0m bgl to 0.30m bgl	Surface Soil
	Bedrock	0.30m bgl to 0.61m bgl	Clay and Stones
		0.61m bgl to 2.97m bgl	Sandstone
NS77SE5965/B5 – located off-site	Superficial Deposits	0.0m bgl to 0.23m bgl	Surface Soils
	Bedrock	0.23m bgl to 3.05m bgl	Sandstone
NS77SE5965/B7 – located off-site	Superficial Deposits	0.0m bgl to 0.36m bgl	Surface Soils
	Bedrock	0.36m bgl to 2.08m bgl	Sandstone
NS77SE5965/B9 – located off-site	Superficial Deposits	0.0m bgl to 0.36m bgl	Mossy Soils
	Bedrock	0.36m bgl to 1.83m bgl	Sandstone
NS77SE5965/B11 – located off-site	Superficial Deposits	0.0m bgl to 0.15m bgl	Surface Soil
		0.15m bgl to 0.66m bgl	Sandy Clay
	Bedrock	0.66m bgl to 3.61m bgl	Sandstone
NS77SE5965/B12 – located off-site	Superficial Deposits	0.0m bgl to 0.23m bgl	Surface Soil
		0.23m bgl to 1.19m bgl	Sandy Clay
	Bedrock	1.19m bgl to 3.66m bgl	Sandstone
NS77SE5965/B13 – located off-site	Superficial Deposits	0.0m bgl to 0.15m bgl	Surface Soil
		0.15m bgl to 0.48m bgl	Peat
		0.48m bgl to 0.79m bgl	Sandy Clay
	Bedrock	0.79m bgl to 2.92m bgl	Fakes

NS77SE5965/B14 – located off-site	Superficial Deposits	2.92m bgl to 4.83m bgl	Sandstone
		0.0m bgl to 0.18m bgl	Surface Soil
		0.18m bgl to 0.69m bgl	Sandy Clay
	Bedrock	0.69m bgl to 1.60m bgl	Sandstone
		1.60m bgl to 3.84m bgl	Fakes
		3.84m bgl to 5.49m bgl	Sandstone

The majority of historical boreholes were recorded to be dry or did not record the groundwater level, however eight of the boreholes located both on-site and off-site encountered the water level at between 0.61m bgl and 4.11m bgl.

The identified historical boreholes reviewed as part of this desk study appear to align with the published BGS geological maps. The boreholes show shallow bedrock is present across the Site and surrounding area.

Copies of these exploratory hole records are included as **Appendix E**.

4.4 Mining and Quarrying

The following summary of the mining and quarrying beneath the Site is based on a review of the information available from the Mining Remediation Authority⁹, BGS GeoIndex⁶, BGS 1:10,560 Sheet NS77SE⁵, BGS County Series Stirlingshire Sheet 34NE¹⁰, Geological Memoirs^{11,12} and the Groundsure Report (**Appendix D**).

AECOM has reviewed the Mining Remediation Authority web based interactive map. This indicates the Site is located within the Coal Mining Reporting Area and a very localised area of the Site, associated with the presence of a mine entry (adit), is located within a Development High Risk Area (DHRA). The mine entry is recorded adjacent to the northern site boundary at the western end of the Site. It is named Greenyards Old Mine and is recorded to be an adit with a bearing of 296 degrees. It is recorded to have an assumed diameter is 2.5m and departure of 10m. The DHRA recorded around this adit entrance extends to within the Site. The BGS BritPit records include a feature at this location described as a working which is wholly underground, access by shaft, adit, drift or incline. They name the feature Greenyards Fireclay Mine and state that the commodity was fireclay.

The Mining Remediation Authority do not hold records for any recorded or probable coal mine workings within influencing distance of the Site. There is, however, anecdotal evidence that very shallow unrecorded mine workings in limestone were encountered within a development to the northeast of the Site, which may represent the Castlecary Limestone. It is possible these workings extend towards the Site, and combined with the presence of the aforementioned adit there is considered to be a high probability of the Site being affected by unrecorded mine workings. The BGS 1:10,560 Sheet NS77SE also show the aforementioned adit, along with further adits, located to the east and north of the Site. These adits are recorded with a range of orientations, with one adit located approximately 100m south of the site bearing at 063 degrees, towards the Site. Some of the adits appear to target the railway cutting north of the Site, including the adit which is recorded adjacent to the northern site boundary in the western end of the Site. The adits all appear to target limestone and other outcrops which dip towards the Site. There are no recorded coal or non-coal mine workings within the vicinity of any of these adits, further suggesting the presence of unrecorded workings within the locality. There is also an associated risk of unrecorded mine entries across the Site.

The BGS Geoindex shows records of 21 non-coal mine plan extents covering areas which include the Site. A number of the plans are however stated to be held by the Mining Remediation Authority and are mine plans for seams at locations out with the vicinity of the Site. The remainder of the plans are referenced Leaseholds & Collieries, 1" Sheet 31, or have no title, but these cover a very large area across Central Scotland, including East Dunbartonshire, Lanarkshire, West Lothian, Fife, Falkirk, Stirling and Glasgow City, and there is no indication to suggest they are associated with mining of limestone, fireclay or any other minerals within the vicinity of the Site. There are however two BGS non-coal mine plans east of the Site which record workings in fireclay. These are named as Cumbernauld Mine Plan showing Lower Leaf of Glenboig Lower Fireclay Workings and Cumbernauld

⁹ Mining Remediation Authority Interactive Viewer, Available from: <https://datamine-cauk.hub.arcgis.com/> Accessed October to November 2025

¹⁰ BGS. OS Six Inch County Series Stirlingshire Sheet 34NE, dated 1913.

¹¹ Geological Survey. The economic geology of the Central Coalfield of Scotland, description of area 2, dated 1917.

¹² Geological Survey. Limestones of Scotland Memoir, dated 1949.

Mine Plan showing Glenboig Upper and Upper Leaf of Glenboig Lower Fireclay Workings. The owner for both plans is stated to be the Glenboig Union Fireclay Co.

Groundsure non-coal mining records identify one mineral commodity on site:

- Vein Mineral, Class A – Likelihood: Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

BGS mapping and the Mining Remediation Authority record the Castlecary Limestone (0 to 1.8m thickness) immediately adjacent to the eastern site boundary and dipping away from the Site. Another limestone outcrop (0 to 0.6m thickness) is recorded outcropping within the west of the Site. This limestone is unnamed on the BGS mapping and by the Mining Remediation Authority, however, it is named in the Groundsure Report as the Plean No.2 Limestone. The adit recorded adjacent to the Site boundary coincides with this feature and therefore the limestone (and associated strata) appear to be the likely target seam for this mine. No other mineral outcrops are recorded within the vicinity of the Site or dipping such that they may be at shallow depth beneath the Site. Note that for the purpose of this report shallow is defined as <10T rock cover, i.e. seams with rock cover of less than 10 times the maximum anticipated extraction thickness.

The Geological Survey economic memoir for the area states that the Plean Limestones, 1, 2 and 3 are present between the Calmy and Castlecary Limestones in the Plean and Denny area (ca. 8km north east of the Site). Here there are three well-marked calcareous horizons containing abundant marine fossils. These were first established as a result of the examination of the cores from borings put down by the East Plean Colliery Company; they have therefore been given the names of the Plean Limestones, 1, 2 and 3. In the Carbrook Mains No. 3 Bore east of Plean Church, where these horizons are particularly well developed, the lowest band Plean No.1 lies 40 fathoms (73m), above the calmy Limestone. It is a shelly limestone, 2 feet 5 inches (0.74m) thick, followed below by 7 inches (0.18m) of shelly blaes, and rests upon a thin coal position.

There is no specific mention in the economic memoir of the Plean Limestones within the Cumbernauld and Castlecary area. It is stated that in this area the higher part of the stratigraphical sequence between the Calmy and Castlecary Limestones is fairly well exposed along the railway in Glenvault, North of Cumbernauld Station, where it consists chiefly of sandstones, fakes and fireclays. Note that Glenvault is located to the north of the Site, beyond Forest Road. The BGS 1:10,560 Sheet NS77SE shows that outcrops within this section of the railway are located stratigraphically below the unnamed limestone outcrop/Plean No.2 Limestone. The map also shows adits between the limestone outcrop and the railway cutting at this location, including the adit which is recorded adjacent to the northern site boundary in the western end of the Site. The BGS 1:10,560 Sheet NS77SE also shows adits and old quarries, including the Glencryan Quarry, located west and south of the Site, in places directly around the Glencryan Burn. These appear to be associated with the same outcrops recorded around the railway to the north of the Site. The economic memoirs states that a lenticular limestone, 0 to 2 feet (0.61m) in thickness is seen in the old freestone quarry east of the road, above Glencryan Burn, where it is associated with fireclays and thick sandstones. The latter were at one time quarried for building-stone. The Limestones of Scotland Memoir does not include mention the Plean Limestones or any limestones between the Calmy and Castlecary Limestone

The economic memoir and BGS 1:10,560 Sheet NS77SE provide no evidence of underground mining within the Castlecary Limestone within this area. The memoir does state however that the position of the outcrop to the south of Glenvault is indicated by an old quarry, now grassed over, near Mid Forest. Two old quarries are recorded along the outcrop position around Mid Forest on BGS 1:10,560 Sheet NS77SE, >250m north of the Site. The Limestones of Scotland Memoir also does not include mention of the Castlecary Limestone as having been worked in this area, but it is known to have been worked in other parts of Central Scotland, and as stated previously there is anecdotal evidence for unrecorded workings to the northeast of the Site, potentially extending towards the Site, which may be in the Castlecary Limestone.

Given all of the information above, there is considered to be a high risk of shallow unrecorded underground mine workings within fireclay and limestone beneath the Site.

Table 4-4 presents the available BGS BritPit information on quarrying operations that have been recorded to take place within 250m of the Site. The potential for additional quarrying operations not recorded on historical mapping cannot be discounted.

Table 4-4 Quarrying (<250m of Site)

National Grid Reference	Distance and Direction	Name	Commodity	Operator	Status/ Material Quarried
NS 77265 74115	163m Southwest	Greenyards	Sandstone	Greenyards	Ceased

Source: Groundsure Report Ref: GS-FME-743-9E9-9AC

The Groundsure Report identifies several surface ground workings within 250m of the Site. Surface ground workings are described as historical land uses identified from Ordinance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled. Table 4-5 presents the available information on surface ground workings. The potential for additional surface workings not recorded on historical mapping cannot be discounted.

Table 4-5 Surface Ground Workings (<250m of Site)

Distance and Direction	Land Use	Year of Mapping
On-Site	Cuttings	1990
On-Site	Unspecified Ground Workings	1990
On-Site	Refuse Heap	1975
On-Site	Cuttings	1897 - 1972
109m South	Refuse / Unspecified Heap	1975 - 1990
111m Southwest	Refuse / Unspecified Heap	1914 - 1922
116m Southwest	Unspecified Heap / Unspecified Old Quarry	1897 - 1972
133m Southeast	Unspecified Heap	1990
222m East	Refuse / Unspecified Heap	1975 - 1990

Source: Groundsure Report Ref: <GS-UKH-NUR-UZ4-SLM>

A summary of the mining review is shown in Table 4-6 below.

Table 4-6 Summary of mining review

Hazard Type	Present within potential influencing distance of the Site AND posing a potentially significant risk (yes/no)	If yes, number of hazards ²
Mining Remediation Authority Development High Risk Area (DHRA) ^{*1}	Yes	1
Recorded Mine Entries	Yes	1
Potential for unrecorded mine entries	Yes	-
Seams with recorded mine workings at potentially shallow depth	No	-
Seams with potential unrecorded shallow mine workings	Yes	1
Surface Mining	Yes	1 (Unspecified Ground Workings)

^{*1} If a site falls within a DHRA then a Mining Risk Assessment (MRA) is required to support the planning application process.

^{*2} A MRA is required to assess the level of risk posed by individual hazards.

This assessment also considers the anticipated reduction in rock cover associated with the proposed rock cuttings.

Preliminary mine gas risks are discussed below in Section 4.5.

4.5 Mine Gas Assessment

In October 2021, Contaminated Land Applications in Real Environments (CL:AIRE) published updated guidance on mine gas risk assessment: 'Good Practice for Risk Assessment for Coal Mine Gas Emissions'. The Site has been characterised for preliminary mine gas risk in accordance with CL:AIRE guidance as the Site is within a

Mining Remediation Authority Mining Reporting Area (representing Step 1 in the preliminary mine gas risk flow chart in CL:AIRE Figure 13.1).

A Consultants Coal Mining Report is provided within Baker Hicks Mining Risk Assessment for the Site (provided in **Appendix F**).

The following information has been reviewed for the Site to determine the mine gas risk level.

Table 4-7 Preliminary Mine Gas Risks

Step No.	Question	Answer	Discussion
2	Are mine entries >50m from the Site boundary?	No	One mine entry is located just off of the northern boundary of the Site.
	Are mine workings >150m depth?	Yes	
	No faults or other potential pathways connecting surface to deeper unflooded workings?	No	Though they are not mapped, there is anecdotal evidence that very shallow unrecorded mine workings are located to the northeast of the Site.
	Outside an area of past or probable shallow workings on Mining Remediation Authority viewer?	No	
3	Workings between 30m and 150m but permanently flooded or covered by 10m+ of low permeability superficial deposits?	Unknown	One mine entry is located within the Site boundary, as such, the assessment should proceed to Step 4.
	Mine entries >50m from site boundary?	No	
4	Mine entries on site or <20m from site boundary?	Yes	Information obtained from a site investigation in the north of the Site indicates presence of mine workings.
	Workings below site <30m depth and unflooded or variable water level (not permanently flooded)?	Unknown	
	Faults or other pathways connecting surface to deeper unflooded workings?	No	One mine entry is located just off of the boundary of the Site.
	Within area of past or probable shallow workings on Mining Remediation Authority viewer?	Yes	

The risk associated with the generation of mine ground gas is considered high based on the approach provided in CL:AIRE guidance. However, where mine workings are permanently flooded by groundwater, this would be expected to reduce the potential for mine gas emission. As there are enclosed buildings outlined in the proposed development, a Detailed Mine Gas Risk Assessment is likely to be required for the Site.

4.6 Hydrogeology

4.6.1 Aquifer Classification & Groundwater Vulnerability

Groundwater bodies are classified by SEPA under the Water Framework Directive, whereby water bodies in Scotland are classed as Good or Poor. A search of SEPA's online database was conducted regarding the groundwater quality beneath the Site. Groundwater within the Site's bedrock formation falls within the 'Kirkintilloch' groundwater body (SEPA ID: 150616) which classified both water quality as 'poor' and water flows and levels as 'good'. Overall, the condition as of 2024 is listed as 'poor', with the condition to remain 'poor' by 2027.

The Groundsure report lists the bedrock aquifer as part of the Clackmannan Group and describes it as a multi-layered low yield moderately productive aquifer.

Groundwater within superficial deposits (Till) is noted as "not a significant aquifer". The bedrock aquifer is classed as "Vulnerable to some pollutants; many others significantly attenuated". No superficial groundwater body is mapped by SEPA.

Information from the BGS Groundwater Vulnerability (Scotland) Report indicates that groundwater vulnerability to pollutants along the Proposed Development is generally low. The recorded vulnerability class is:

- Class 2 - Groundwater vulnerable to some pollutants, but only when they are continuously discharged or leached.

There are no water wells shown on or near the Site (BGS GeoIndex).

4.6.2 Licensed Groundwater Abstractions and Source Protection Zones

According to SEPA, no Licensed Groundwater Abstractions have been identified within 250m of the Site.

4.6.3 Preliminary Hydrogeological Model and Flow Direction

Groundwater flow direction within the shallow superficial aquifer will likely be influenced by the local topography. However, the nature and extent of groundwater bodies within the area is unknown, therefore groundwater flow direction should be further characterised by ground investigation if required.

5. Regulatory Information and Consultation

5.1 Introduction

The key relevant features that characterise the Site and surrounding area are summarised in this section, along with an indication of the risk to the land quality of the Site. Generally, any regulated activities within 250 m of the Site could, depending upon their nature, represent potential off-site sources of contamination.

5.2 Regulatory Database Review

Table 5-1 summarises information obtained from the regulatory database information contained in the Groundsure report (**Appendix D**). All data suppliers are referenced in the Groundsure report.

Regulatory information is excluded from the table below where it is not within the specified distances, where there is no information for the given topic or where entries are duplicated.

Table 5-1 Summary of Regulatory Information

Subject	Number present		Details	
	On site	0-250m		
<u>Industrial Land Uses</u>				
Historical Industrial Land Uses	6	8	Five historical industrial land uses are identified onsite. These land uses are listed as Unspecified Ground Workings, Refuse Heap, Cuttings and Electricity Substations. Seven additional historical industrial sites were noted within the surrounding area around the Site. These land uses are listed as Refuse Heaps, Unspecified Heaps, Unspecified Depot, Old Lime Kiln, Unspecified Old Quarry and Tunnels.	
Historical Railway	-	1	One Tunnel is identified within the area surrounding the Site. The tunnel is located approximately 78m to the west of the Site. The age of the tunnel is noted between 1967 and 1990.	
Historical Landfills	1	2	One historical landfill site is identified onsite. Two additional historical landfill sites were identified in the surrounding area around the Site at a distance of 107m south and 212m east. All three historical sites are described as Refuse Tip and identified in the 1968 mapping.	
Recent Industrial Land Uses	1	1	One recent industrial land use is identified on site. An additional recent industrial land use is identified in the surrounding area at a distance of 128m east. Both recent industrial land uses are described as pylons.	
Recent Railway	-	1	A railway is identified in the area surrounding the Site. It is noted approximately 55m northwest of the Site.	
<u>Sensitive Land Uses</u>				
Designated Woodland	Ancient	-	6	Six designated ancient woodlands are listed within 250m of the Site. All are unnamed and vary in type including Ancient (of semi-natural origin), Long-Established (of plantation origin) and Other (on Roy map).

A review of the information provided within the Groundsure report identifies a variety of sources and receptors within and around the Site boundaries. The information provided for the proposed development site identifies several historical and recent industrial land uses including ground workings, cuttings, pylons, quarries, railways and refuse tips located on site and in the surrounding area. Additionally, it identifies a sensitive receptor (ancient woodland) adjacent to the Site boundary.

Pastmap¹³ was also reviewed to confirm if sites of archaeological significance are located on site or within the surrounding area. No sites of interest were identified during the review.

5.3 Regulatory Consultation

5.3.1 Local Authority Environmental Health Officer

The Environmental Health Team at North Lanarkshire Council (NLC) was contacted to request pertinent information on the environmental conditions of the Site. Since the request was lodged, the site boundary has

¹³ <https://www.pastmap.org.uk/map>

been adjusted. The following review is assessed against the finalised red line planning boundary. The response provided in **Appendix G** dated 3 November 2025 confirmed the following:

- Two features of interest are identified on-site. The features are described waste (landfills and other waste treatment & disposal sites) and an electricity production & distribution site. These are thought to represent the refuse heaps noted above as well as the substation currently under consideration.
- NLC noted 14No. further features of interest are identified in the surrounding area. These features include three rail related land uses, five areas of unknown filled ground, a mine shaft, two mines, a pipeline, waste facility and sewage works.
- NLC noted two features of interest are identified in the surrounding area. These features include an area of filled ground and a mine.
- One closed landfill is noted on the eastern boundary of the proposed site. No further details are provided.

Council records do not provide any additional information that is pertinent to the Site.

5.3.2 Scottish Environmental Protection Agency

The Environmental & Consumer Protection Team at SEPA was contacted to request pertinent information on the environmental conditions of the site. The following information has been issued to AECOM on 2nd October 2025 (F0199794), a copy of the correspondence is available in **Appendix G**.

The response confirmed the following:

- There is no information relating to historical land uses for the Site.
- There are no 'special sites' identified within 750m of the Site.
- There are no particular areas of sensitivity within 750m of the Site.

5.3.3 Planning Information

The North Lanarkshire web-based planning portal was reviewed to identify whether there are existing planning conditions which relate to the Site area. No additional planning applications are identified in the surrounding area.

5.3.4 Scottish Environment Protection Agency Flooding Data

The SEPA Flood Maps website was accessed on 14th October 2025 and confirmed that the following flooding risks are recorded for the Site:

- **Flooding from Rivers and Sea** – the Site is not in an area of designated flood risk from river flooding, suggesting there is no specific likelihood of river flooding identified in the area. There still could be some localised effects from flooding in the area. This is also confirmed by the Groundsure Report.
- **Surface Water Flooding** – the majority of the Site is not in an area of designated flood risk from surface water flooding. Small, isolated areas primarily located to the existing substation are identified as having a risk from surface water flooding. These isolated areas range from 0.1% to 10% chance of flooding. This is also confirmed by the Groundsure Report.
- **Groundwater Flooding** – the Site is located in an area of designated flood risk from groundwater flooding. The risk along the northern portion of the Site is negligible while the southern portion of the Site is designated as a low risk.
- **Coastal Flooding** - The Site is not at risk of coastal flooding. This is also confirmed by the Groundsure Report.

A formal flood risk assessment is outside the scope of this report.

5.3.5 Unexploded Ordnance

To assess the potential risks from Unexploded Ordnance (UXO) at the Site, the Zetica Unexploded Bomb Risk Map¹⁴ was used on 14th October 2025. The Zetica Bomb Risk Map for the Site and surrounding area indicated that Low risk area, which is defined by Zetica as an 'area indicated as having 15 bombs per 1000 acres or less'.

¹⁴ Zetica, Risk Maps, Available: <https://zeticauxo.com/guidance/risk-maps/> Accessed October 2025

A Zetica Pre-Desk Study Assessment (PDSA) has not identified WWI or WWII military activities on or affecting the Site. The extended assessment is in **Appendix H**.

Table 5-2 Summary of WWII Military Activities On or Affecting the Site

Date	On or Affecting the Site
Military Activity	No significant military activity affecting the Site has been identified.
WWI Bombing	No readily available records have been found indicating that the Site was bombed.
WWII Bombing	No readily available records have been found indicating that the Site was bombed. During WWII the Site was located in the Dumbartonshire Landward Area, which officially recorded 1236 No. High Explosive (HE) bombs with a bombing density of less than 8.4 bombs per 405 ha. No readily available records have been found to indicate that the Site was bombed.
Bombing Decoys	None identified on the Site.

5.4 Radon

The UK Health Security Agency's UK Radon website¹⁵ was reviewed on 14th October 2025 to determine potential radon risks for the Site.

According to the website, the Site including the proposed extension of the current substation area is located within an area where less than 1% of homes are above the action level for radon gas.

The above is also confirmed by the Groundsure Report (**Appendix C**). It is therefore anticipated that radon protective measures will not be necessary for the proposed Substation area with occupied buildings.

¹⁵ UK Health Security Agency, 2022. UK maps of radon, Available: [UKradon - UK maps of radon](#) Accessed October 2025

6. Preliminary Site Model and Risk Assessment

6.1 Introduction

The preliminary CSM has been developed to identify potentially complete contaminant linkages that may require further investigation to assess their existence and/ or potential significance. The potential sources of contamination on or in the vicinity of the Site, receptors on or near the Site, and pathways on or near the Site are discussed within the following sub-sections.

A summary of the applicable legislative and planning framework, and AECOM's approach to assessment used in the following sections is presented in **Appendix B**.

6.2 Sources of Potential Contamination

Based on the Site setting, history and land-uses described in preceding sections, the following sources of contamination and contaminants of potential concern (CoPC) listed in Table 6-1 have been identified.

The CoPC are based on information provided in the Department of Environment Industry Profiles, known contamination identified at the Site and AECOM's industry experience.

Table 6-1 Potential Sources of Contamination

Source	Description	CoPC
Pastural / agricultural (On-site/Off-site)	Across both the Site and the surrounding area.	Contaminants may include, metals, herbicides and pesticides.
Mining / quarrying / lime kiln (off-site)	Located off-site in the surrounding area.	Metals, PAH, TPH, acids, alkalis and asbestos.
Electricity Substation (On-site/Off-site)	Land underneath and near the existing substation, particularly the northern corner of the Site area.	Contaminants may include, chlorinated aromatic hydrocarbons and heavy metals, PCBs and sulphates.
Refuse tip (On-site/Off-site)	Refuse tip located onsite and in the surrounding area.	Contaminants may include, metals and inorganic compounds, pH, ground gas, PAHs, TPH including BTEX and MTBE, SVOCs, VOCs, sulphates, sulphides, cyanides, phenols, ACMs
Made ground (On-site/Off-site)	Associated with the historical infilled refuse tips and quarries (on-site / off-site) and construction of pylon towers and roads (on-site/off-site), the existing substation (on-site) and railway land (off-site).	Contaminants may include, metals and inorganic compounds, pH, ground gas, PAHs, TPH, BTEX and MTBE, SVOCs, VOCs, sulphates, sulphides, cyanides, phenols, ACMs
Railway land (Off-site)	Rail tracks, railway tunnels and subway tracks located to the north of site boundary.	Contaminants may include, metals and metalloids, SVOCs, VOCs, PAH-16, PCBs, Sulphate, ACM/asbestos, Herbicides, Glycols.
Lime kiln (off-site)	Located off-site in the surrounding area.	Metals, PAH, TPH, acids, alkalis and asbestos;

6.2.1 Ground Gas Sources

The identified sources of ground gas within Section 6.2 above have been further characterised in Table 6-2 below using BS 8576:2013 "Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs)" – Figure 6 to determine the ground gas generation potential of the sources.

Table 6-2 Potential Sources of Contamination

Source	BS 8576 Ground Gas Generation Potential	Justification
Made Ground (on-site / off-site)	Very Low	Potential made ground deposits could be present on site but are classified as having a 'very low' ground gas generation potential by BS 8576:2013 and are therefore unlikely to represent a significant source of ground gas generation.
Filtering beds / Sewage works (off-site)	Moderate	Filtering beds noted within the surrounding area, dated pre-1900's.
Refuse tip / heap (on-site / off-site)	High	The refuse tips and landfill were noted to be present from the 1960's through to the 1990's and is classified as having a 'high' ground gas generation potential by BS 8576:2013 as the waste cannot be confirmed to be inert.
Mine gas	High	Mining features of interest have been identified in the area around the Site. According to the CL:AIRE guidance, the Site is assessed as having a 'high' mine gas risk.

6.3 Potential Receptors

Potential receptors associated with the Site are shown on Table 6-3.

Table 6-3 Potential Receptors

Receptor Group	Receptor	Description
Human Health	Construction and remediation workers	Workers involved in construction of the Site.
	Maintenance workers	Substation maintenance teams and contractors.
	Site users	Visitors to the new substation.
	Neighbouring land users	Public open space users.
Water Environment	Superficial and bedrock aquifers	Superficial Till deposits, Clackmannan Group bedrock formation and the Denny' groundwater body.
	Surface waters	Red Burn, Glencryan Burn and several unnamed drains / inland rivers within the surrounding area of the Site.
Built Environment	Buildings & Infrastructure: Concrete	Concrete foundations for the proposed new development.
	Buildings & Infrastructure: Services	Water supply for the proposed new development for maintenance purposes
Sensitive Sites	Designated Ancient Woodland	Six designated ancient woodlands located in the surrounding area.

6.4 Potential Pathways

Potential pathways associated with the proposed development are shown in Table 6-4.

Table 6-4 Potential Pathways

Pathway Group	Pathway
Human Health	Ingestion of soil and dust
	Inhalation of dust - indoor and outdoor
	Dermal contact - indoor and outdoor
	Vapour intrusion and inhalation – indoors and outdoors
	Gas ingress – explosive atmosphere
	Gas ingress – inhalation
Water Environment	Leaching and vertical migration through unsaturated zone

Pathway Group	Pathway
	Lateral migration in groundwater
	Vertical migration in groundwater
	Direct run-off
	Baseflow from groundwater to surface water
	Migration via preferential pathways (services trenches, faults etc)
Built Environment	Gas intrusion - explosion
	Direct contact - corrosion
	Direct contact - permeation of water pipe
Sensitive Sites	Plant uptake

6.5 Discounted Sources / Pathways / Receptors

The following sources, pathways and receptors are discounted from the conceptual site model with the justification presented:

Table 6-5 Discounted Sources / Pathways / Receptors

Group	Discounted Item	Justification
Receptors	Human Health: Trespassers / Visitors	It is assumed that throughout construction and once all the works are completed at the Site, that the Site will comprise a secure hazardous area that will not be accessed by members of the public. As such, it is not considered likely that trespassers / visitors will access the Site during its operation as a substation.
Sources	Historical agricultural land	Agricultural land use is considered unlikely to represent a significant source of contamination, given the nature and periodic use of the land for agricultural use.

6.6 Preliminary Risk Assessment

AECOM's approach to the preliminary risk assessment follows the guidance outlined in CIRIA C552 and is described in further detail in **Appendix B**.

The qualitative preliminary risk assessment of the possible linkages of the above sources, exposure and transport pathways and receptors is provided in the Table 6-6 below.

Table 6-6 Summary of Preliminary CSM and Risk Assessment

Source	Receptor	Exposure Pathway	Probability	Consequence	Risk Category	Justification	
On-site Contamination sources including areas of made ground, electrical substation and refuse tips.	Human Health – On-site	Current site users post development	Inhalation of contaminants in soil-derived dust and asbestos fibres.	Unlikely	Medium	Low Risk	Potential for encountering contamination is likely to be low for the new development area based on the land uses identified. The main potential contamination sources are the made ground beneath the existing substation and the surrounding area as well as the substation itself. Based on the proposed development, the Site will be covered by building footprints or plant with hardstanding areas (roads, car parks) this will provide separation between potential contaminant sources (if present) and receptors. Although there could be a greater potential for contact by site users in areas of soft landscaping.
			Dermal contact with and ingestion of contaminants in soil, soil-derived dust and water.	Unlikely	Medium	Low Risk	
			Inhalation of vapours and ground gas	Low likelihood	Medium	Moderate / Low	
			Inhalation of mine gas	Likely	Medium	Moderate Risk	
		Construction / Maintenance Workers	Dermal contact with and ingestion of contaminants in soil, soil-derived dust and water.	Likely	Medium	Moderate Risk	Construction workers could be exposed to contaminants during construction works including during excavations and stockpiling. Ground gases, mine gases and / or vapours do represent a potential risk to construction or maintenance workers when working in confined spaces, including excavations. Works should be undertaken in accordance with the Construction Design and Management (CDM) 2015 regulations. Prior to work commencing, a health and safety risk assessment should be carried out.
			Inhalation of contaminants in soil-derived dust and asbestos fibres.	Likely	Medium	Moderate Risk	
			Inhalation of vapours and ground gas	Likely	Medium	Moderate Risk	
			Inhalation of mine gas	Likely	Medium	Moderate Risk	
		Human Health – Off- site	Third Party Neighbours (public open space users and nearby residents)	Inhalation of contaminants in soil-derived dust.	Unlikely	Medium	Low Risk
	Inhalation of vapours and / or ground gas.			Unlikely	Medium	Low Risk	
	Inhalation of mine gas			Low likelihood	Severe	Moderate Risk	
	Water Environment / Controlled Waters	Superficial and Bedrock Aquifers	Leaching of contaminants in the unsaturated zone to groundwater in underlying aquifers.	Likely	Medium	Moderate Risk	Potentially significant contamination is not anticipated given the desk study findings. Potential for encountering contamination is likely to be low for the new development based on the land uses identified, but it could be higher within the existing substation areas.
			Migration of contaminated water through preferential pathways such as underground services, pipes and granular material to groundwater in underlying aquifers.	Likely	Medium	Moderate Risk	
		Surface Water Features inc. Glencryan Burn, Red Burn and several unnamed watercourses	Lateral migration of contaminated groundwater with discharge to surface watercourses as base flow.	Likely	Mild	Moderate / Low	There is potential for localised contamination to be present from the Site's historical land use. Due to the aquifers moderately vulnerability and moderate productivity classification, it is possible for contaminants to impact the aquifer beneath the Site. Given the consolidated nature of the Till deposits, it is likely these will act as a barrier and mitigate the vertical migration of contamination towards deeper groundwater. However, on review of the borehole information, the superficial deposits report a thin band above the bedrock. The lack of thickness limits the effectiveness of the mitigation potential. The presence of hardstanding / building footprint for the proposed development will help limit the potential for infiltration and subsequent leaching. It is likely that contaminants would migrate to surface water given the short distance to the nearest surface water feature. However, the potential for encountering significant contamination is unlikely based on the previous land uses identified at the Site.
			Discharge of contaminants entrained in surface water run-off followed by overland flow and discharge.				
				Likely	Mild	Moderate / Low	
	The Built Environment	Existing and future structures, Temporary compounds and Public Water Supply	Direct contact of contaminants in soil and/or groundwater	Unlikely	Minor	Very Low Risk	There is a potential that aggressive ground conditions could be present, in particular associated with the existing made ground. Below ground concrete should be designed in accordance with BRE Special Digest 1 Concrete in Aggressive Ground. Organic contaminants could be present in shallow soil which could affect standard polyethylene water supply pipes. Further assessment of contaminant concentrations is required once any water supply pipe routes are known. There is a possibility that ground gas could be present due to potential sources both on-site and in the surrounding area. Due to the proposed development including enclosed spaces, further investigation is recommended to assess the risk of ground gas. Mine gas do represent a potential source both on-site and in the surrounding area. Due to the proposed development including enclosed spaces, a further mine gas investigation is recommended to assess the risk of ground gas.
			Ground gas ingress into structures and explosion.	Unlikely	Severe	Moderate / Low	
			Mine gas ingress into structures and explosion.	Likely	Severe	High	
	Sensitive Sites	Ancient Woodlands	Plant uptake.	Unlikely	Mild	Very Low Risk	Potential for encountering contamination based on the land uses identified is anticipated to be low / moderate. The Site is not expected to have an impact of the surrounding sensitive receptors.
Off-site contamination sources including off-site	Human Health – On-site	Current site users post development	Dermal contact with and ingestion of contaminants in soil, soil-derived dust and water.	Unlikely	Medium	Low Risk	The potential risk from off-site contamination sources has been assessed as unlikely on review of the historical land uses in the area. The potential for significant contamination from off-site sources is likely to be low unless the sources are disturbed.
			Inhalation of contaminants in soil-derived dust and asbestos fibres.	Unlikely	Medium	Low Risk	

Source	Receptor		Exposure Pathway	Probability	Consequence	Risk Category	Justification
made ground, lime kiln, railway land and former pits/heaps.		Construction / Maintenance Workers	Dermal contact with and ingestion of contaminants in soil, soil-derived dust and water.	Unlikely	Medium	Low Risk	A higher potential risk could exist for workers during excavations.
			Inhalation of contaminants in soil-derived dust and asbestos fibres.	Unlikely	Medium	Low Risk	
		The Built Environment	Direct contact of contaminants in soil and/or groundwater	Unlikely	Mild	Very Low Risk	Potential off-site sources of contamination have been identified surrounding the Site.
			Ground gas ingress into structures and explosion.	Unlikely	Severe	Moderate / Low	Whilst risks cannot be entirely discounted, potential impacts can be managed by relatively inexpensive engineered mitigation measures for a site of this nature.
			Mine gas ingress into structures and explosion.	Likely	Severe	High	There is a possibility that ground gas could be present due to potential sources in the surrounding area. Due to the proposed development including enclosed spaces, further investigation is recommended to assess the risk of ground gas. Mine gas do represent a potential source both on-site and in the surrounding area. Due to the proposed development including enclosed spaces, a further mine gas investigation is recommended to assess the risk of ground gas.

7. Conclusions and Recommendations

7.1 Conclusions

The main potential source of contamination associated with the proposed development area comprises the existing substation which has been shown on historical mapping since the 1975 and the refuse heaps identified along the boundary and the surrounding area of the Site. Made ground is also likely to be present associated with the existing substation. However, the immediate surrounding area including part of the proposed development area, comprises pastoral / agricultural land which is unlikely to represent a significant source of contamination unless, for example, contaminated material has been buried.

Activities associated with the existing substation and made ground could pose a potential contamination risk to human health and the water environment, in particular groundwater, should contamination be present. The proposed development includes for a large portion of hardstanding (including access roads and walkways) and building cover. As such, the hardstanding across the proposed redevelopment reduces potential impacts to on-site human health receptors by severing pathways. The water environment is considered to be the most sensitive receptor, with a thin layer of granular superficial geology potential enabling migration of contamination to shallow bedrock (if present). However, where hardstanding is present this will reduce the potential for leaching to groundwater.

A number of potentially contaminating land uses have been identified in the wider area, including quarries, sewage works, railway land and refuse tips. Whilst there is a potential that contaminants could migrate towards the Site from current and past land uses identified in the wider area, it is unlikely to represent a significant impact.

Potential sources of ground gas and mine gas have been identified onsite or within the immediate surrounding area. The inclusion of enclosed buildings does pose a risk of ground gas, mine gas and vapour build-up.

The Site is anticipated to be underlain by Till. Due to the consolidated nature of Till deposits, it is expected to act as a barrier, limiting vertical migration towards groundwater and the underlying Upper Limestone bedrock Formation.

Based on the available desk study information and the proposed development, the Site is classified overall as having **Moderate / Low to Moderate** risk with respect to contaminated land.

Information gathered during this assessment has identified the following potential geotechnical and underground constraints:

- Potential Made Ground associated with the current and historical development as well as restored opencast material;
- Limited information on the nature of superficial deposits, although available historical boreholes suggest they are likely to be thin (<3m);
- Limited information on the groundwater depth, although a potential for localised areas of shallow groundwater based on available historical boreholes;
- Existing structures and potential for historical and currently active utilities;
- Limited information on the strength and depth of bedrock, although available historical boreholes suggest shallow bedrock of approximately 3m or less depth. On this basis it is expected that large rock cuttings will be required as shown in Figure 1 generating an excess of material which may be suitable for use elsewhere in the development;
- There are no recorded mine workings within influencing distance of the Site;
- The Site lies within a Mining Remediation Authority Development High Risk Area associated with a recorded mine entry (an adit). There is an associated risk of subsidence associated with potential unrecorded shallow underground fireclay, limestone and/or subordinate coal mine workings and the potential for additional unrecorded mine entries;

- Limited available information on bedrock including potential unrecorded shallow mine workings is a potentially significant constraint for currently proposed rock cuttings of up to between 17m to 22m height extending to the existing sub-station.

7.2 Recommendations

It is recommended to complete a Mining Risk Assessment (MRA) for the Site. Purchase and review of a Mining Remediation Authority Consultants Mining Report is required as part of the MRA.

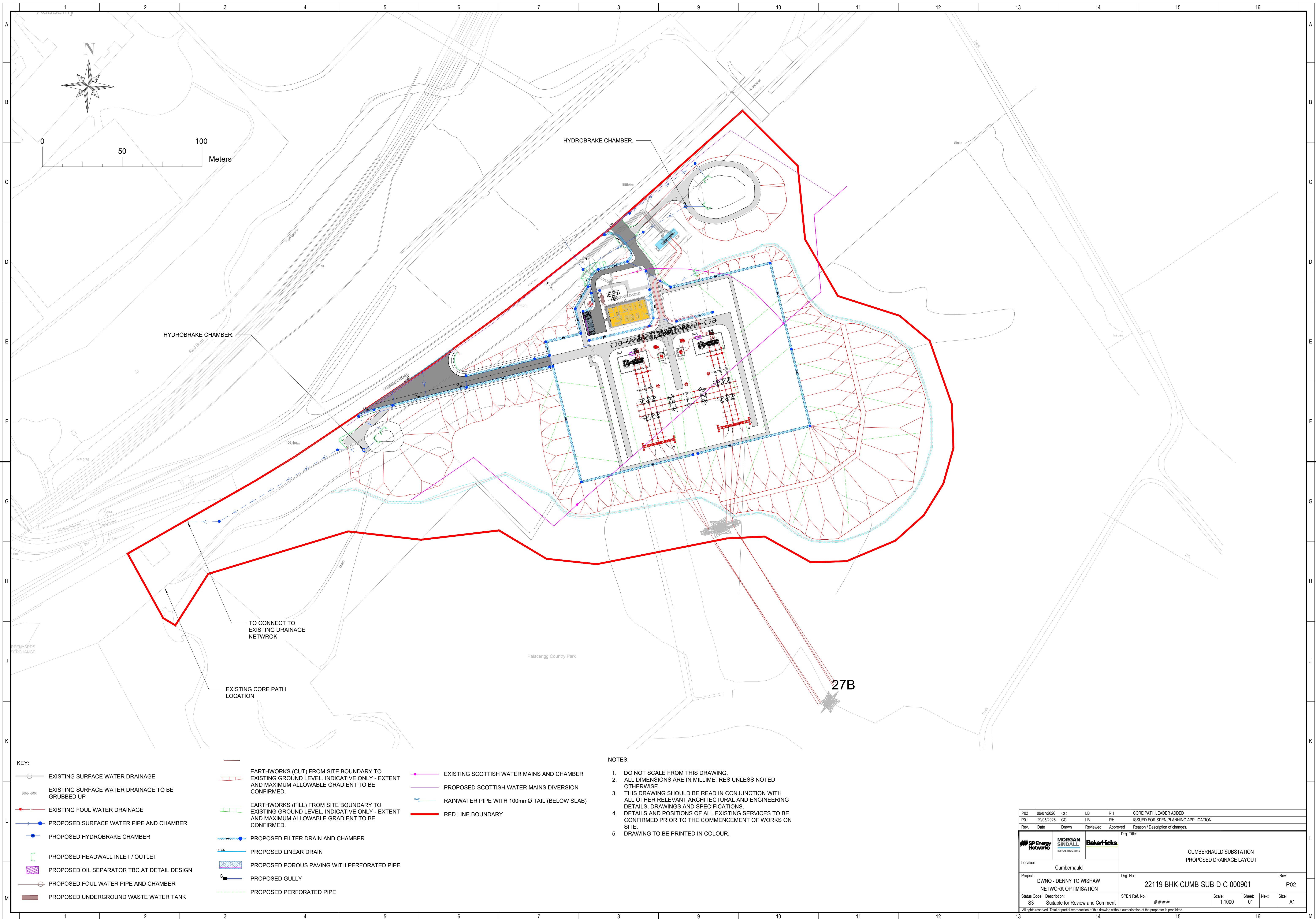
Following the completion of a MRA, a geo-environmental and geotechnical ground investigation should be designed with due consideration of the requirements of BS 10175:2011 (+A2 2017) to support the development design (including earthworks and foundation design) and to confirm potential risks associated with / mitigation requirements of potential contamination sources, geotechnical and mining constraints. The geotechnical elements of the investigation should be designed with consideration of BS EN 1997-1:2004, BS EN 1997-2:2007 (Eurocode 7: Geotechnical Design – Parts 1 and 2) and BS 5930:1999.

It is recommended that the ground investigation and subsequent reporting include the following:

- Characterisation of the ground conditions to ascertain more certainty in geotechnical, mining and contaminated land assessments;
- Sampling and analysis of soil, groundwater, surface water and leachate to confirm the presence / absence of contaminants;
- Ground gas and groundwater monitoring to confirm the groundwater level and the presence / absence of contamination and elevated ground/mine gas concentrations in addition to a CL:AIRE (2021) Mine Gas Risk Assessment;
- Preparation of a preliminary engineering assessment for the Site; and,
- Preparation of a quantitative risk assessment of risks to human health and water environment.

It is recommended that the ground investigation be designed in accordance with the UK Specification for Ground Investigation (version 3).

Appendix A Drawings



Appendix B Approach to Reporting

B.1 Legislative Context and Guidance

Where this report relates to existing or proposed planning application, it considers the contents of the Town and Country Planning (Scotland) Act 1997 (as amended), the National Planning Framework 4 (NPF4) (2023) and considers the potential implications of Part 2A of the Environmental Protection Act 1990 (Part 2A), the associated Contaminated Land: Statutory Guidance Edition 2 (2006) and the Planning Advice Notice 33 (PAN33).

This report has been prepared in general accordance with the technical guidance and procedures described in the UK Government guidance Land Contamination: Risk Management (2020 updated in 2025) and its predecessor, Model Procedures for the Management of Land Contamination, Contaminated Land Report (CLR) 11 (Department of Food and Rural Affairs (Defra)/Environment Agency, 2004), British Standard (BS) 5930:2015 (as amended) Code of Practice for Site Investigations (BSI), BS:EN 1997 Eurocode 7 – Geotechnical Design (BSI), BS 10175:2011 (as amended) Investigation of Potentially Contaminated Sites – Code of Practice (BSI) and Land Contamination and Development – Guidance for Assessing and Addressing Land Contamination Issues to Meet the Requirements of Contaminated Land Regulators in Scotland.

SEPA and the Scottish formally adopted the published LCRM guidance, specifically the updated LCRM guidance published in 2025.

B.2 Historical Map Review

AECOM notes that only indicative map scales are provided. Where dates are stated, these refer to the dates of maps on which the features are present, have changed use or are no longer annotated, and do not necessarily refer to the exact dates of existence of a particular feature. Development that may have occurred between map editions is recorded as occurring on the latter published map, hence there are some limitations to the accuracy to the date of development unless supplementary evidence is available.

B.3 Conceptual Site Model Derivation

The CSM is aimed at identifying possible risks, if any, arising from substances used or deposited on-site, or from other sources of land contamination. Both past and current potentially contaminative land uses have been considered. It is based on the proposed site redevelopment described in **Section 1** of this report.

Assessment Framework

The site, in terms of potential land contamination, will be regulated by the Local Authority under the Town and Country Planning (Scotland) Act 1997 (as amended), taking account of the National Planning Framework 4 (2023), with the Scottish Environment Protection Agency, NatureScot and Historic Environment Scotland acting as potential statutory consultees.

Environmental liabilities can arise through provisions contained within statutory legislation including Part 2A of the EPA 1990, Environmental Liability (Scotland) Regulations 2009 (as amended), Water Environment and Water Services (Scotland) Act 2003, and the Environmental Authorisations (Scotland) Regulations 2018 (as amended) (EASR)..

Current best practice recommends that the determination of health hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Contaminated Land: Statutory Guidance Edition 2 (2006) and Land Contamination: Risk Management (LCRM).

The “suitable for use” approach is adopted (as outlined in the Contaminated Land: Statutory Guidance Edition 2 (2006)) for the assessment of contaminated land where remedial measures are undertaken where unacceptable risks to human health or the environment are realised taking into account the use (or proposed use) of the land in question and the environmental setting.

The risk assessment process for environmental contaminants is based on a source-pathway-receptor analysis. These terms can be defined as follows:

- **Source:** hazardous substance that has the potential to cause adverse impacts;
- **Pathway:** route whereby a hazardous substance may come into contact with the receptor: examples include ingestion of contaminated soil and leaching of contaminants from soil into watercourses; and

- **Receptor:** target that may be affected by contamination: examples include human occupants/ users of site, water resources (surface waters or groundwater), or structures.

For a risk to be present, there must be a relevant / viable contaminant linkage; i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

AECOM have determined the potential sources, pathways and receptors to assess potential risks/ liabilities and constraints associated with the site in its current condition prior to any proposed redevelopment. Risks associated with the proposed redevelopment have also been assessed based on the future land use scenario specified, including any potential sources of contamination, potential receptors and potential contaminant pathways identified during this desk-based assessment.

B.4 Approach to Risk Assessment

Current best practice recommends that the determination of hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Environment Agency guidance on LCRM.

For a risk to be present, there must be a viable contaminant linkage; i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

Assessments of risks associated with each of these contaminant linkages are discussed in the following sections.

Using criteria broadly based on those presented in the CIRIA C552, the magnitude of the risk associated with potential contamination at the Site has been assessed. To do this an estimate is made of:

- The magnitude of the potential consequence (i.e. severity);
- The magnitude of probability (i.e. likelihood).

The severity of the risk is classified according to the criteria in Table 7-1.

Table 7-1 Description of Severity of Risk

Severity	Definition	Examples (as defined by C552)
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by Environmental Protection Act 1990, Part IIA. Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings \ property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note: the definitions of ecological systems Within the Draft Circular on Contaminated Land, DETR, 2000).	• High concentrations of cyanide on the surface of an informal recreation area. • Major spillage of contaminants from site into controlled water. • Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR 2000). Pollution of sensitive water resources (note: Water Resources Act contains no for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem. (note: the definitions of ecological systems within Draft Circular on Contaminated Land, DETR, 2000).	• Concentrations of a contaminant from site exceed the generic, or site-specific assessment criteria. • Leaching of contaminants from a site to a major or minor aquifer. • Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ("significant harm" as defined in the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings / structures / services or the environment.	• Pollution of non-classified groundwater. • Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable effects of damage to buildings, Structures and services.	• The presence of contaminants at such concentrations that protective equipment is required during site works. • The loss of plants in a landscaping scheme. • Discoloration of concrete.

The probability of the risk occurring is classified according to the criteria in Table 7-2.

Table 7-2 Likelihood of Risk Occurrence

Likelihood	Definition	Example
High	There is a pollutant linkage and an event that either appears very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution.	- The contaminant linkage exists or is very likely to exist in the short term, and / or may also be linked to visual / olfactory evidence of that linkage being present and active in some cases. - The conditions are such that there is no foreseeable reason to suggest that a source-pathway-receptor linkage is not occurring and required mediums for a contamination source to pass through / within to reach a receptor are all present.
Likely	There is pollutant linkage and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.	The conditions are such that there are very few foreseeable reasons to suggest that a source-pathway-receptor linkage is not occurring, and that all or most of the required mediums for a contamination source to pass through / within to each a receptor are present.
Low Likelihood	There is pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a long period such an event would take place, and is less likely in the shorter term.	The source, pathway and receptor linkage may exist and it is possible that contamination could reach a receptor in certain circumstances. The site conditions indicate that there are limiting factors in the pathway mediums / generation potential of the source / or presence of the receptor.
Unlikely	There is pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.	The source, pathway and receptor may exist in certain circumstances, but the contaminant linkage is improbable in the short term and in the long term.

An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in Table 7-3.

Table 7-3 Risk based on Comparison of Likelihood and Severity

		Severity			
Likelihood		SEVERE	MEDIUM	MILD	MINOR
	HIGH	Very High	High	Moderate	Moderate/Low
	LIKELY	High	Moderate	Moderate/Low	Low
	LOW	Moderate	Moderate/Low	Low	Very Low
	UNLIKELY	Moderate/Low	Low	Very Low	Very Low

Further description of the classified risks as defined by CIRIA C552 is provided below.

Very high risk

There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without remediation action OR there is evidence that severe harm to a designated receptor is already occurring. Realisation of that risk is likely to present a substantial liability to be site owner/or occupier. Investigation is required as a matter of urgency and remediation works likely to follow in the short-term.

High risk

Harm is likely to arise to a designated receptor from an identified hazard at the site without remediation action. Realisation of the risk is likely to present a substantial liability to the site owner/or occupier. Investigation is required as a matter of urgency to clarify the risk. Remediation works may be necessary in the short-term and are likely over the longer term.

Moderate risk

It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild. Further investigative work is normally required to clarify the risk and to determine the potential liability to site owner/occupier. Some remediation works may be required in the longer term.

Low risk

It is possible that harm could arise to a designated receptor from identified hazard, but it is likely at worst, that this harm if realised would normally be mild. It is unlikely that the site owner/or occupier would face substantial liabilities from such a risk. Further investigative work (which is likely to be limited) to clarify the risk may be required. Any subsequent remediation works are likely to be relatively limited.

Very low risk

It is a low possibility that harm could arise to a designated receptor, but it is likely at worst, that this harm if realised would normally be mild or minor.

Discussion of Acute Risk to Construction Workers

AECOM understands that the proposed development works will be undertaken in compliance with Construction Design and Management (CDM) 2015 regulations.

Prior to work commencing, a health and safety risk assessment should be carried out by the appointed Principal Contractor / developed in accordance with current health and safety regulations. This assessment should cover potential risks to construction staff, permanent site staff and the local population. Based on the findings of this risk assessment, appropriate mitigation measures should be implemented during the construction period.

The greatest potential for generation of dust will be during the Site works and therefore dust generation should be kept to a minimum in accordance with general best practice, as outlined in, for example, 'Environmental Good Practice on Site', CIRIA Publication C692 to reduce this risk.

The risk to construction workers during the excavation and construction phases in terms of potential exposure to high concentrations of contaminants is considered to be low given the historic and current land uses identified at the Site. Should gross contamination be identified during the construction phase, then this may pose a potential acute risk to construction works. It is likely to be able to be effectively managed through good health and safety practices and protocols. Adoption of appropriate dust suppression techniques would also mitigate the degree of potential particulate migration off-site.

Appendix C Site Photographic Record

Client Name: Scottish and Southern Electricity Networks

Cumbernauld Substation

Project No.
60602788

Photo No.
1

Date:
28/08/2025

View north of the existing substation.



Photo No.
2

Date:
28/08/2025

View of the northwestern boundary of the existing substation looking south.



Client Name: Scottish and Southern Electricity Networks

Cumbernauld Substation

Project No.
60602788

Photo No.
3

Date:
28/08/2025

View of the woodland area to the south of the existing substation looking west.



Photo No.
4

Date:
28/08/2025

View of the overhead lines southeast of the existing substation looking north.



Client Name: Scottish and Southern Electricity Networks

Cumbernauld Substation

Project No.
60602788

Photo No.
5

Date:
28/08/2025

View of stockpiled soils noted across the site.



Photo No.
6

Date:
28/08/2025

View of existing substation infrastructure looking east.



Client Name: Scottish and Southern Electricity Networks

Cumbernauld Substation

Project No.
60602788

Photo No.
7

Date:
28/08/2025

View from main entrance way off from Forest Road looking south.



Photo No.
8

Date:
28/08/2025

View of existing structure within the Cumbernauld substation looking east.



Appendix D Groundsure Report

Cumbernauld Substation

Order Details

Date: 26/09/2025
Your ref: 60602788 - Cumbernauld Substation
Our Ref: GS-FME-743-9E9-9AC

Site Details

Location: 277455 674348
Area: 5.63 ha
Authority: [North Lanarkshire Council](#) ↗



[Summary of findings](#)

[p. 2 >](#) [Aerial image](#)

[p. 7 >](#)

[OS MasterMap site plan](#)

[p.12 >](#) [Insight User Guide](#) ↗

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
13 >	1.1 >	Historical industrial land uses >	6	3	14	71	-
17	1.2	Historical tanks	0	0	0	0	-
17 >	1.3 >	Historical energy features >	0	0	0	2	-
18	1.4	Historical petrol stations	0	0	0	0	-
18	1.5	Historical garages	0	0	0	0	-
18	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
19 >	2.1 >	Historical industrial land uses >	6	3	18	83	-
24	2.2	Historical tanks	0	0	0	0	-
24 >	2.3 >	Historical energy features >	0	0	0	2	-
24	2.4	Historical petrol stations	0	0	0	0	-
24	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
25	3.1	Active or recent landfill	0	0	0	0	-
25	3.2	Historical landfill (BGS records)	0	0	0	0	-
26 >	3.3 >	Historical landfill (LA/mapping records) >	1	0	2	1	-
26	3.4	Licensed waste sites	0	0	0	0	-
26	3.5	Historical waste sites	0	0	0	0	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
27 >	4.1 >	Recent industrial land uses >	1	0	1	-	-
28	4.2	National Geographic Database (NGD) - Current or recent tanks	0	0	0	-	-
28	4.3	Current or recent petrol stations	0	0	0	0	-
28	4.4	Electricity cables	0	0	0	0	-
28	4.5	Gas pipelines	0	0	0	0	-
28	4.6	Sites determined as Contaminated Land	0	0	0	0	-
28	4.7	Control of Major Accident Hazards (COMAH)	0	0	0	0	-



29	4.8	Regulated explosive sites	0	0	0	0	-
29	4.9	Hazardous substance storage/usage	0	0	0	0	-
29	4.10	Part A(1), IPPC and Historic IPC Authorisations	0	0	0	0	-
29 >	4.11 >	Part B Authorisations >	0	0	0	1	-
30	4.12	Pollution inventory substances	0	0	0	0	-
30	4.13	Pollution inventory waste transfers	0	0	0	0	-
30	4.14	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
31	5.1	Superficial aquifer	None (within 500m)				
32 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
33 >	6.1 >	Water Network (OS MasterMap) >	5	1	26	-	-
36 >	6.2 >	Surface water features >	1	1	8	-	-
Page	Section	River flooding					
37	7.1	River flooding	Negligible (within 50m)				
Page	Section	Coastal flooding					
38	8.1	Coastal flooding	Negligible (within 50m)				
Page	Section	Surface water flooding >					
39 >	9.1 >	Surface water flooding >	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
41 >	10.1 >	Groundwater flooding >	Low (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
42 >	11.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
43	11.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
43	11.3	Special Areas of Conservation (SAC)	0	0	0	0	0
43 >	11.4 >	Special Protection Areas (SPA) >	0	0	0	0	2
44	11.5	National Nature Reserves (NNR)	0	0	0	0	0
44	11.6	Local Nature Reserves (LNR)	0	0	0	0	0
44 >	11.7 >	Designated Ancient Woodland >	0	2	5	2	14



45	11.8	Biosphere Reserves	0	0	0	0	0
45	11.9	Forest Parks	0	0	0	0	0
46	11.10	Marine Conservation Zones	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
47	12.1	World Heritage Sites	0	0	0	-	-
47	12.2	Area of Outstanding Natural Beauty	0	0	0	-	-
47	12.3	National Parks	0	0	0	-	-
47	12.4	Listed Buildings	0	0	0	-	-
48	12.5	Conservation Areas	0	0	0	-	-
48	12.6	Scheduled Ancient Monuments	0	0	0	-	-
48	12.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
49 >	13.1 >	Agricultural Land Classification >	Grade 3.2 (within 250m)				
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
51 >	14.1 >	10k Availability >	Identified (within 500m)				
52	14.2	Artificial and made ground (10k)	0	0	0	0	-
53 >	14.3 >	Superficial geology (10k) >	1	0	1	3	-
54	14.4	Landslip (10k)	0	0	0	0	-
55 >	14.5 >	Bedrock geology (10k) >	2	0	8	2	-
56 >	14.6 >	Bedrock faults and other linear features (10k) >	0	0	3	3	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
57 >	15.1 >	50k Availability >	Identified (within 500m)				
58	15.2	Artificial and made ground (50k)	0	0	0	0	-
58	15.3	Artificial ground permeability (50k)	0	0	-	-	-
59 >	15.4 >	Superficial geology (50k) >	1	0	1	4	-
60 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
60	15.6	Landslip (50k)	0	0	0	0	-
60	15.7	Landslip permeability (50k)	None (within 50m)				
61 >	15.8 >	Bedrock geology (50k) >	2	0	5	1	-



62 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
62 >	15.10 >	Bedrock faults and other linear features (50k) >	0	0	1	2	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
64 >	16.1 >	BGS Boreholes >	7	4	36	-	-
Page	Section	Natural ground subsidence >					
67 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
68 >	17.2 >	Running sands >	Very low (within 50m)				
70 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
71 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
72 >	17.5 >	Landslides >	Low (within 50m)				
74 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
76 >	18.1 >	BritPits >	0	1	2	12	-
81 >	18.2 >	Surface ground workings >	4	3	16	-	-
82 >	18.3 >	Underground workings >	0	3	2	12	7
83	18.4	Underground mining extents	0	0	0	0	-
84	18.5	Historical Mineral Planning Areas	0	0	0	0	-
84 >	18.6 >	Non-coal mining >	1	0	0	1	2
85	18.7	JPB mining areas	None (within 0m)				
85	18.8	The Coal Authority non-coal mining	0	0	0	0	-
85	18.9	Researched mining	0	0	0	0	-
85	18.10	Mining record office plans	0	0	0	0	-
86	18.11	BGS mine plans	0	0	0	0	-
86 >	18.12 >	Coal mining >	Identified (within 0m)				
86	18.13	Brine areas	None (within 0m)				
86	18.14	Gypsum areas	None (within 0m)				
87	18.15	Tin mining	None (within 0m)				
87	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes >	On site	0-50m	50-250m	250-500m	500-2000m



88	19.1	Natural cavities	0	0	0	0	-
89 >	19.2 >	Mining cavities >	0	0	0	1	0
89	19.3	Reported recent incidents	0	0	0	0	-
89	19.4	Historical incidents	0	0	0	0	-
Page	Section	Radon >					
90 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
92 >	21.1 >	BGS Estimated Background Soil Chemistry >	5	5	-	-	-
92 >	21.2 >	BGS Estimated Urban Soil Chemistry >	12	8	-	-	-
93	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects >	On site	0-50m	50-250m	250-500m	500-2000m
94	22.1	Underground railways (London)	0	0	0	-	-
94	22.2	Underground railways (Non-London)	0	0	0	-	-
95 >	22.3 >	Railway tunnels >	0	0	1	-	-
95 >	22.4 >	Historical railway and tunnel features >	0	0	5	-	-
95	22.5	Royal Mail tunnels	0	0	0	-	-
96	22.6	Historical railways	0	0	0	-	-
96 >	22.7 >	Railways >	0	0	6	-	-
96	22.8	Crossrail 2	0	0	0	0	-
96	22.9	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 21/04/2021

Site Area: 5.63ha



Recent site history - 2018 aerial photograph



Capture Date: 25/05/2018

Site Area: 5.63ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 26 September 2025

Recent site history - 2005 aerial photograph



Capture Date: 11/05/2005

Site Area: 5.63ha



Recent site history - 2002 aerial photograph



Capture Date: 24/09/2002

Site Area: 5.63ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 26 September 2025

Recent site history - 2001 aerial photograph



Capture Date: 11/05/2001

Site Area: 5.63ha



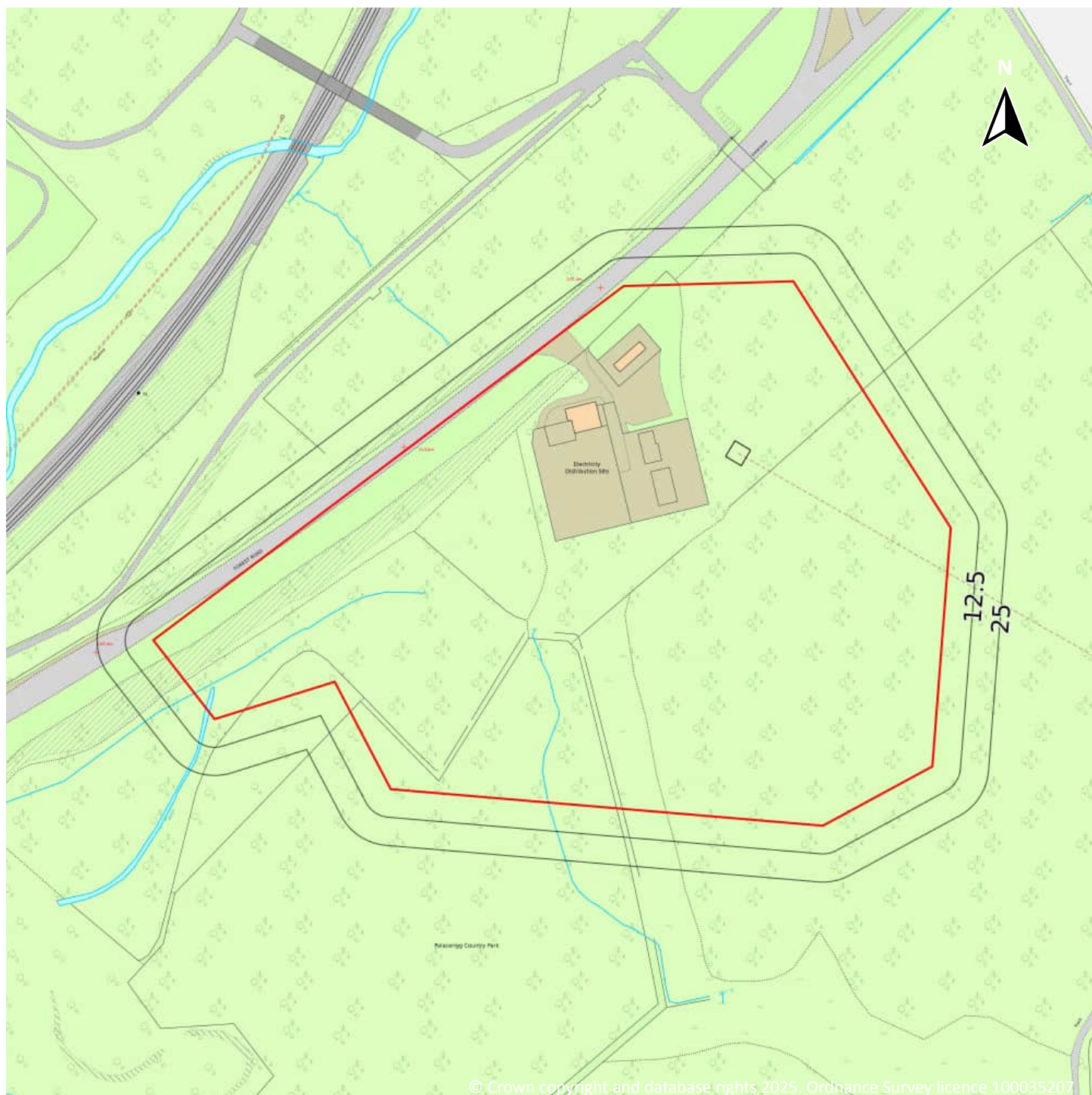
Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 26 September 2025

OS MasterMap site plan



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Site Area: 5.63ha



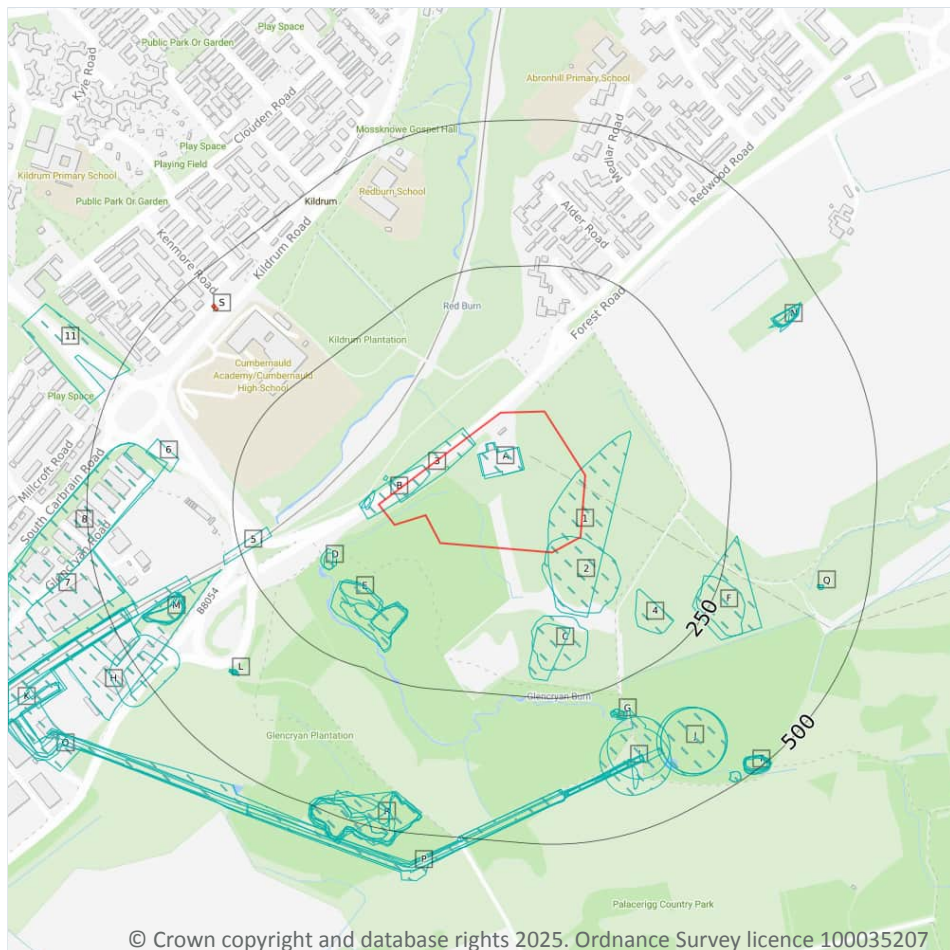
Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 26 September 2025

1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical energy features

1.1 Historical industrial land uses

Records within 500m

94

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 13 >](#)

ID	Location	Land use	Dates present	Group ID
1	On site	Unspecified Ground Workings	1990	87834



ID	Location	Land use	Dates present	Group ID
2	On site	Refuse Heap	1975	91749
3	On site	Cuttings	1990	189219
A	On site	Electricity Transformer Station	1975	96573
A	On site	Electricity Substation	1990	122680
B	On site	Cuttings	1972	154946
B	12m NW	Unspecified Old Level	1897	176020
B	15m W	Unspecified Old Level	1914	165158
B	25m NW	Unspecified Old Level	1899	116757
C	109m S	Refuse Heap	1975	91748
D	111m SW	Unspecified Heap	1914 - 1922	165347
D	113m SW	Refuse Heap	1922	91930
E	116m SW	Unspecified Heap	1972	129001
E	116m SW	Unspecified Heap	1922	151625
E	118m SW	Unspecified Old Quarry	1914	162971
C	122m S	Unspecified Heap	1990	113121
E	125m SW	Unspecified Old Quarry	1922	151603
E	125m SW	Unspecified Old Quarry	1972	129441
E	129m SW	Unspecified Old Quarry	1897 - 1899	126915
4	133m SE	Unspecified Heap	1990	113122
5	192m W	Tunnel	1975 - 1990	180714
F	222m E	Refuse Heap	1975	91750
F	222m SE	Unspecified Heap	1990	113123
G	290m S	Filtering Beds	1897	161100
G	290m S	Filtering Beds	1914	185351
G	290m S	Unspecified Tank	1922	117404
G	292m S	Filtering Beds	1899	196110
G	293m SE	Filter Beds	1922	186235
H	294m SW	Unspecified Depot	1975 - 1990	145687



ID	Location	Land use	Dates present	Group ID
I	300m SE	Unspecified Mine	1922	173265
I	313m SE	Unspecified Mine	1972	184291
J	339m SE	Unspecified Level	1899	138629
J	343m SE	Unspecified Level	1897	129871
J	343m SE	Unspecified Level	1914	168826
K	349m SW	Railway Sidings	1914 - 1922	172936
6	351m W	Cuttings	1972	90420
L	368m SW	Old Lime Kiln	1914 - 1922	192384
7	368m W	Industrial Estate	1990	109401
L	369m SW	Old Lime Kiln	1859	171896
L	369m SW	Unspecified Old Kiln	1972	124993
L	370m SW	Old Lime Kiln	1922	195251
M	371m SW	Unspecified Pit	1896	189240
M	372m SW	Unspecified Pit	1922	138594
M	373m SW	Unspecified Pit	1859	163885
M	373m SW	Unspecified Pit	1897 - 1914	146608
M	377m SW	Unspecified Pit	1922	158980
I	378m S	Tunnel	1922	170239
I	379m S	Adit	1990	112757
I	379m SE	Tunnel	1972	159281
I	379m SE	Tunnel	1897	166805
I	379m SE	Tunnel	1914	176108
I	381m SE	Tramway Sidings	1899 - 1914	196815
I	381m SE	Tunnel	1899	175157
I	382m S	Tunnel	1922	189998
8	389m W	Unspecified Depots	1975	110422
I	393m S	Unspecified Heap	1922	113284
N	402m NE	Unspecified Old Quarry	1897	140188



ID	Location	Land use	Dates present	Group ID
O	406m S	Tramway Sidings	1922	181590
O	406m S	Tramway Sidings	1914 - 1922	146816
O	409m S	Tramway Sidings	1897	128952
N	413m NE	Unspecified Old Quarry	1914	188752
P	413m S	Tramway Sidings	1899	140726
N	413m NE	Unspecified Old Quarry	1922	144111
N	414m NE	Unspecified Old Quarry	1899	184435
Q	414m E	Unspecified Mine	1972	142824
N	415m NE	Unspecified Old Quarry	1972	158176
Q	417m E	Unspecified Mine	1922	147359
H	430m SW	Unspecified Yards	1896	195780
R	432m S	Unspecified Disused Quarry	1922	136562
P	434m S	Unspecified Quarry	1914	184621
R	435m S	Unspecified Disused Quarry	1972	169134
R	439m S	Unspecified Disused Quarry	1922	138144
R	440m S	Unspecified Quarry	1899	131863
K	453m SW	Railway Sidings	1897	146937
R	454m S	Unspecified Quarry	1859	178668
R	454m S	Unspecified Disused Quarry	1975 - 1990	167080
H	460m SW	Unspecified Yards	1922	153655
9	460m W	Bus Depot	1975	102795
K	465m SW	Railway Sidings	1972	152373
H	469m SW	Unspecified Works	1990	108337
10	470m SW	Railway Sidings	1896	189966
K	470m SW	Railway Sidings	1922	196718
T	472m SE	Unspecified Old Quarry	1922	170898
R	473m S	Unspecified Quarry	1897	149961
R	473m S	Unspecified Quarry	1914	168667



ID	Location	Land use	Dates present	Group ID
T	473m SE	Unspecified Quarry	1899	173632
T	474m SE	Unspecified Quarry	1897	163613
T	474m SE	Unspecified Quarry	1914	172819
T	474m SE	Unspecified Old Quarry	1972	183763
T	475m SE	Unspecified Old Quarry	1922	158376
T	476m SE	Unspecified Pit	1990	103703
T	478m SE	Unspecified Heap	1914	136747
T	478m SE	Unspecified Heap	1897	186741
11	485m NW	Cuttings	1975 - 1990	172023

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

0

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

2

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 13 >](#)

ID	Location	Land use	Dates present	Group ID
S	433m NW	Electricity Substation	1994	4774
S	441m NW	Electricity Substation	1989	6266



This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

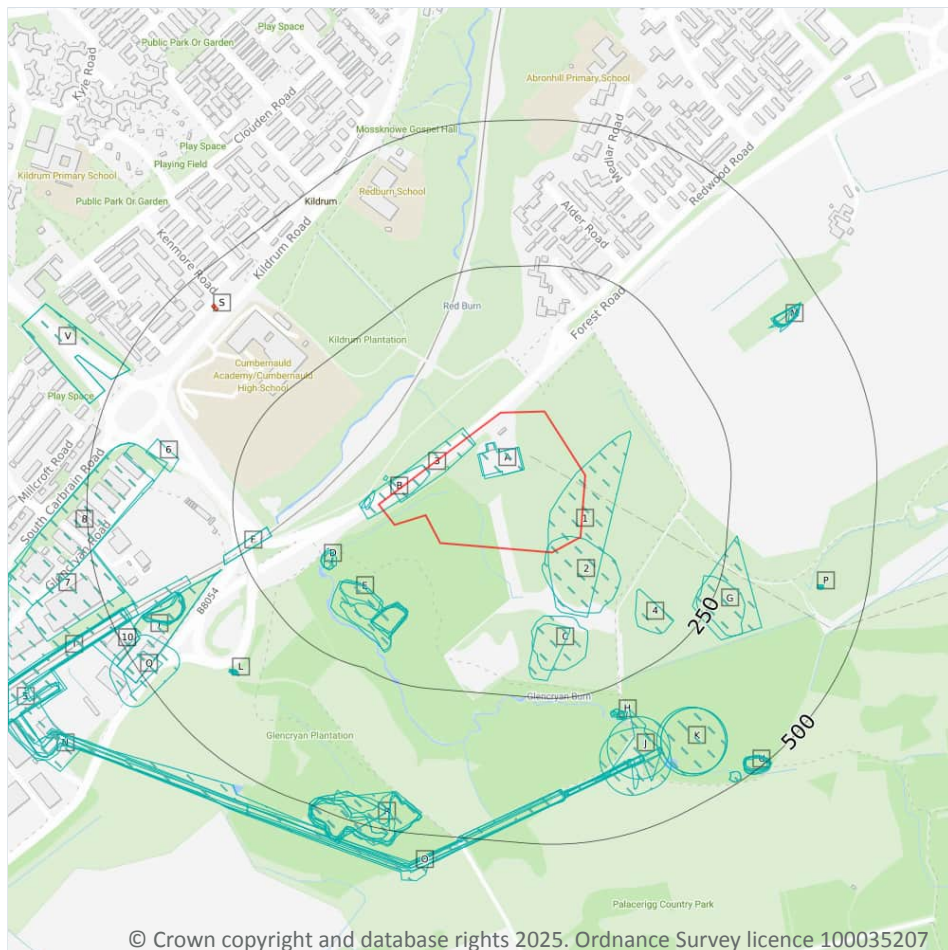
0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical energy features

2.1 Historical industrial land uses

Records within 500m

110

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19](#) >

ID	Location	Land Use	Date	Group ID
1	On site	Unspecified Ground Workings	1990	87834
2	On site	Refuse Heap	1975	91749
3	On site	Cuttings	1990	189219



ID	Location	Land Use	Date	Group ID
A	On site	Electricity Substation	1990	122680
A	On site	Electricity Transformer Station	1975	96573
B	On site	Cuttings	1972	154946
B	12m NW	Unspecified Old Level	1897	176020
B	15m W	Unspecified Old Level	1914	165158
B	25m NW	Unspecified Old Level	1899	116757
C	109m S	Refuse Heap	1975	91748
D	111m SW	Unspecified Heap	1922	165347
D	113m SW	Refuse Heap	1922	91930
D	113m SW	Unspecified Heap	1914	165347
E	116m SW	Unspecified Heap	1972	129001
E	116m SW	Unspecified Heap	1922	151625
E	118m SW	Unspecified Old Quarry	1914	162971
C	122m S	Unspecified Heap	1990	113121
E	125m SW	Unspecified Old Quarry	1922	151603
E	125m SW	Unspecified Old Quarry	1972	129441
E	126m SW	Unspecified Old Quarry	1922	151603
E	129m SW	Unspecified Old Quarry	1897	126915
E	132m SW	Unspecified Old Quarry	1899	126915
4	133m SE	Unspecified Heap	1990	113122
F	192m W	Tunnel	1990	180714
F	192m W	Tunnel	1975	180714
G	222m E	Refuse Heap	1975	91750
G	222m SE	Unspecified Heap	1990	113123
H	290m S	Filtering Beds	1914	185351
H	290m S	Filtering Beds	1897	161100
H	290m S	Unspecified Tank	1922	117404
H	292m S	Filtering Beds	1899	196110



ID	Location	Land Use	Date	Group ID
H	293m SE	Filter Beds	1922	186235
I	294m SW	Unspecified Depot	1990	145687
I	294m SW	Unspecified Depot	1975	145687
H	295m SE	Filter Beds	1922	186235
J	300m SE	Unspecified Mine	1922	173265
J	313m SE	Unspecified Mine	1972	184291
J	328m S	Unspecified Mine	1922	173265
K	339m SE	Unspecified Level	1899	138629
K	343m SE	Unspecified Level	1914	168826
K	343m SE	Unspecified Level	1897	129871
5	349m SW	Railway Sidings	1914	172936
6	351m W	Cuttings	1972	90420
L	368m SW	Old Lime Kiln	1922	192384
7	368m W	Industrial Estate	1990	109401
L	369m SW	Old Lime Kiln	1859	171896
L	369m SW	Unspecified Old Kiln	1972	124993
L	370m SW	Old Lime Kiln	1922	195251
I	371m SW	Unspecified Pit	1896	189240
I	372m SW	Unspecified Pit	1922	138594
L	373m SW	Old Lime Kiln	1914	192384
I	373m SW	Unspecified Pit	1859	163885
I	373m SW	Unspecified Pit	1914	146608
I	373m SW	Unspecified Pit	1897	146608
I	377m SW	Unspecified Pit	1922	158980
J	378m S	Tunnel	1922	170239
J	379m S	Adit	1990	112757
J	379m SE	Tunnel	1972	159281
J	379m SE	Tunnel	1914	176108



ID	Location	Land Use	Date	Group ID
J	379m SE	Tunnel	1897	166805
J	381m SE	Tramway Sidings	1899	196815
J	381m SE	Tunnel	1899	175157
J	382m SE	Tramway Sidings	1914	196815
J	382m S	Tunnel	1922	189998
8	389m W	Unspecified Depots	1975	110422
J	393m S	Unspecified Heap	1922	113284
M	402m NE	Unspecified Old Quarry	1897	140188
N	406m S	Tramway Sidings	1922	181590
N	406m S	Tramway Sidings	1914	146816
N	408m S	Tramway Sidings	1922	146816
N	409m S	Tramway Sidings	1897	128952
M	413m NE	Unspecified Old Quarry	1914	188752
O	413m S	Tramway Sidings	1899	140726
M	413m NE	Unspecified Old Quarry	1922	144111
M	414m NE	Unspecified Old Quarry	1899	184435
P	414m E	Unspecified Mine	1972	142824
M	415m NE	Unspecified Old Quarry	1972	158176
M	416m NE	Unspecified Old Quarry	1922	144111
P	417m E	Unspecified Mine	1922	147359
P	419m E	Unspecified Mine	1922	147359
Q	430m SW	Unspecified Yards	1896	195780
R	432m S	Unspecified Disused Quarry	1922	136562
O	434m S	Unspecified Quarry	1914	184621
R	435m S	Unspecified Disused Quarry	1972	169134
R	439m S	Unspecified Disused Quarry	1922	138144
R	440m S	Unspecified Quarry	1899	131863
T	453m SW	Railway Sidings	1897	146937



ID	Location	Land Use	Date	Group ID
R	454m S	Unspecified Quarry	1859	178668
R	454m S	Unspecified Disused Quarry	1990	167080
R	454m S	Unspecified Disused Quarry	1975	167080
Q	460m SW	Unspecified Yards	1922	153655
9	460m W	Bus Depot	1975	102795
T	465m SW	Railway Sidings	1972	152373
10	469m SW	Unspecified Works	1990	108337
11	470m SW	Railway Sidings	1896	189966
T	470m SW	Railway Sidings	1922	196718
U	472m SE	Unspecified Old Quarry	1922	170898
R	473m S	Unspecified Quarry	1914	168667
R	473m S	Unspecified Quarry	1897	149961
U	473m SE	Unspecified Quarry	1899	173632
U	474m SE	Unspecified Quarry	1914	172819
U	474m SE	Unspecified Quarry	1897	163613
U	474m SE	Unspecified Old Quarry	1972	183763
T	475m SW	Railway Sidings	1922	172936
U	475m SE	Unspecified Old Quarry	1922	158376
U	476m SE	Unspecified Pit	1990	103703
U	478m SE	Unspecified Heap	1914	136747
U	478m SE	Unspecified Heap	1897	186741
V	485m NW	Cuttings	1990	172023
V	485m NW	Cuttings	1975	172023

This data is sourced from Ordnance Survey / Groundsure.



2.2 Historical tanks

Records within 500m**0**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m**2**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19 >](#)

ID	Location	Land Use	Date	Group ID
S	433m NW	Electricity Substation	1994	4774
S	441m NW	Electricity Substation	1989	6266

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

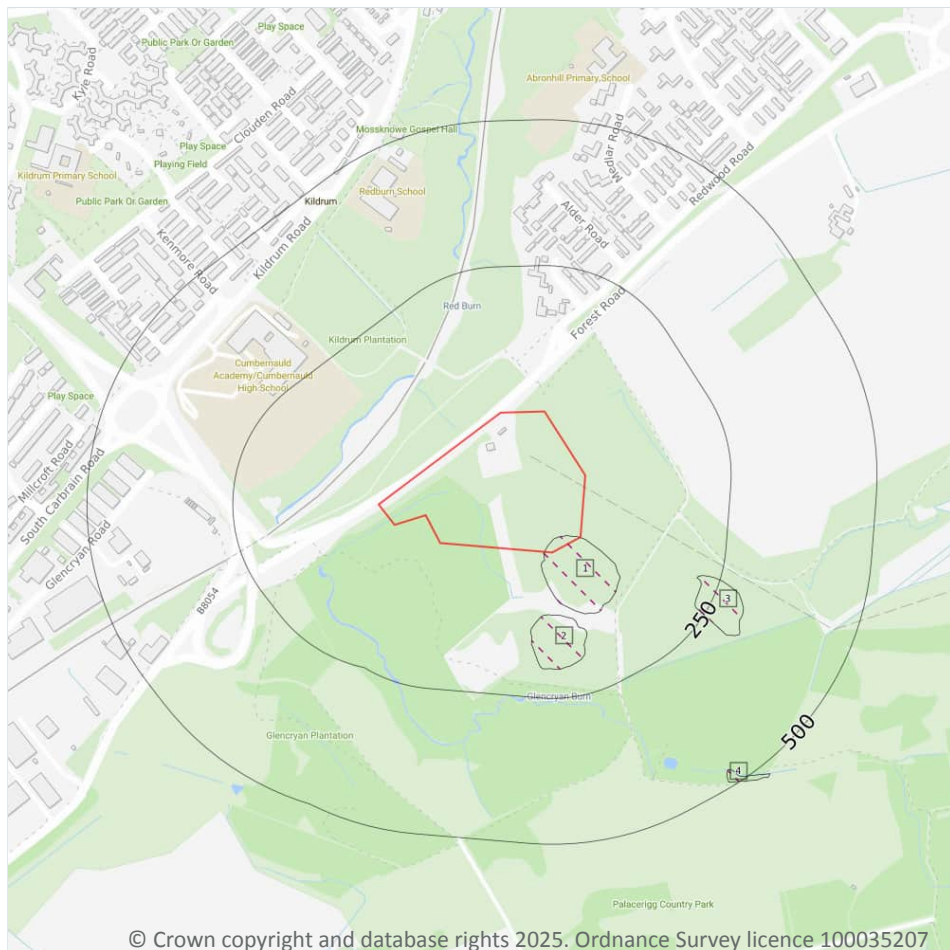
Records within 500m**0**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- 1 Historical landfill (LA/OS)

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3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Scottish Environment Protection (SEPA) regulation.

This data is sourced from the Scottish Environment Protection Agency.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m**4**

Landfill sites identified from Local Authority records and high detail historical mapping.

Features are displayed on the Waste and landfill map on [page 25 >](#)

ID	Location	Site address	Source	Data type
1	On site	Refuse Tip	1968 mapping	Polygon
2	107m S	Refuse Tip	1968 mapping	Polygon
3	212m E	Refuse Tip	1968 mapping	Polygon
4	472m SE	Refuse Tip	1968 mapping	Polygon

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Licensed waste sites

Records within 500m**0**

Active or recently closed waste sites under Scottish Environment Protection Agency (SEPA) regulation.

This data is sourced from the Scottish Environment Protection Agency.

3.5 Historical waste sites

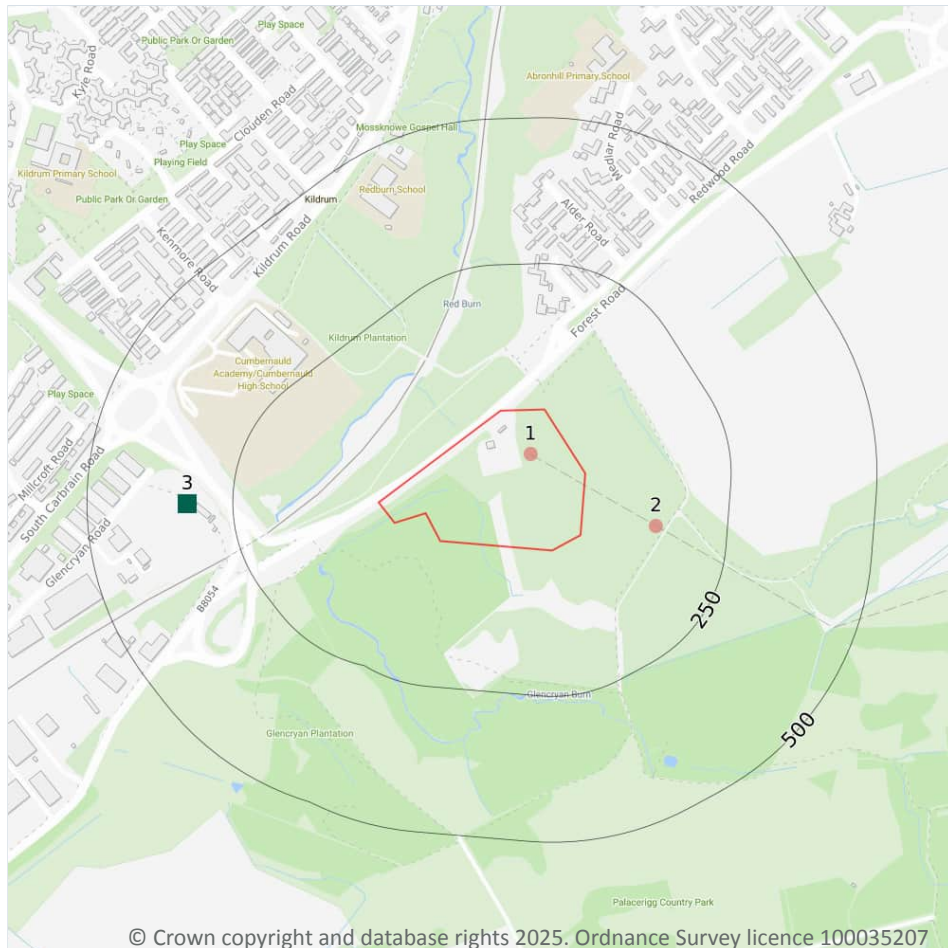
Records within 500m**0**

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- Part B Authorisations

4.1 Recent industrial land uses

Records within 250m

2

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 27 >](#)

ID	Location	Company	Address	Activity	Category
1	On site	Pylon	Dunbartonshire, G67	Electrical Features	Infrastructure and Facilities
2	128m E	Pylon	Dunbartonshire, G67	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.



4.2 National Geographic Database (NGD) - Current or recent tanks

Records within 250m**0**

Current or recent tanks identified from the Ordnance Survey NGD.

This data is sourced from Ordnance Survey.

4.3 Current or recent petrol stations

Records within 500m**0**

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.4 Electricity cables

Records within 500m**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.5 Gas pipelines

Records within 500m**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.6 Sites determined as Contaminated Land

Records within 500m**0**

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.7 Control of Major Accident Hazards (COMAH)

Records within 500m**0**

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.



4.8 Regulated explosive sites

Records within 500m

0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.9 Hazardous substance storage/usage

Records within 500m

0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.10 Part A(1), IPPC and Historic IPC Authorisations

Records within 500m

0

Records of Part A installations regulated for the release of substances to the environment.

This data is sourced from the Scottish Environment Protection Agency.

4.11 Part B Authorisations

Records within 500m

1

Records of Part B installations regulated for the release of substances to the environment.

Features are displayed on the Current industrial land use map on [page 27](#) >

ID	Location	Address	Operator	Processes undertaken	License reference
3	328m W	Carbrain Reserve Power Facility MCP, Glencryan Road, Cumbernauld, G67 2UH	Flexilegridpower3 Ltd	PPC(B) - Combustion of Fuels	PPC/B/1186 376

This data is sourced from the Scottish Environment Protection Agency.



4.12 Pollution inventory substances

Records within 500m**0**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.13 Pollution inventory waste transfers

Records within 500m**0**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.14 Pollution inventory radioactive waste

Records within 500m**0**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer

5.1 Superficial aquifer

Records within 500m

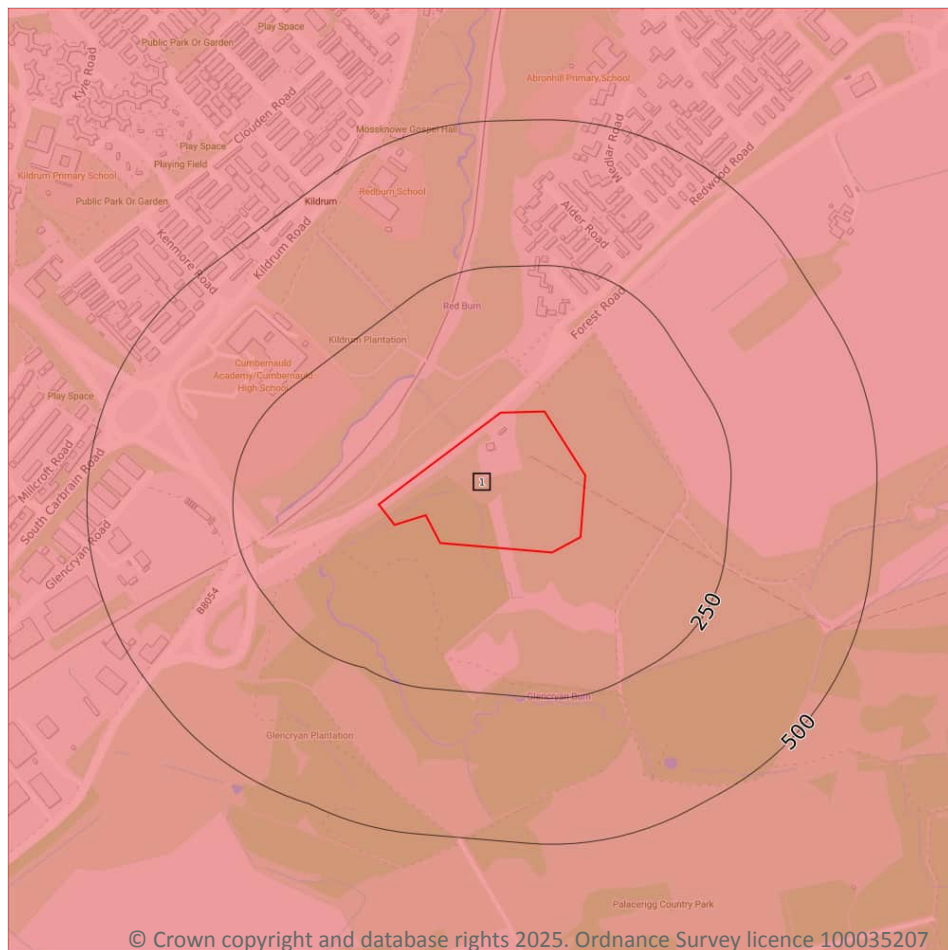
0

Records of groundwater classification within superficial geology.

This data is sourced from the British Geological Survey.



Bedrock aquifer



- Site Outline**
- Search buffers in metres (m)**
- Highly productive - fissures/discontinuities
 - Highly productive - intergranular
 - Moderately productive - fissures/discontinuities
 - Moderately productive - intergranular
 - Low productive - fissures/discontinuities
 - Low productive - intergranular
 - No significant groundwater

5.2 Bedrock aquifer

Records within 500m

1

Records of groundwater classification within bedrock geology.

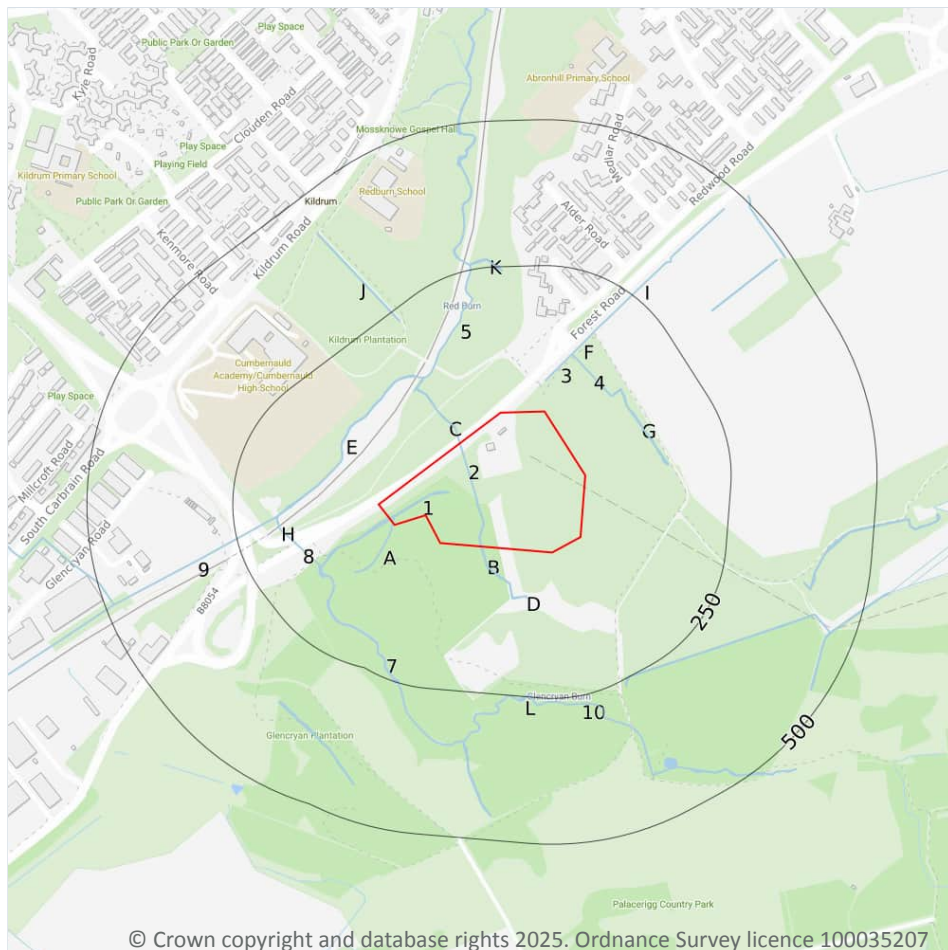
Features are displayed on the Bedrock aquifer map on [page 32](#) >

ID	Location	Description	Flow	Summary	Rock description
1	On site	Moderately productive aquifer	Flow is virtually all through fractures and other discontinuities	Multi-layered aquifer with low yields except where disturbed by mining. Passage Group has moderate yields up to 10 L/s.	CLACKMAN NAN GROUP

This data is sourced from the British Geological Survey.



6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)

6.1 Water Network (OS MasterMap)

Records within 250m

32

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on [page 33](#) >

ID	Location	Type of water feature	Ground level	Permanence	Name
1	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
2	On site	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	26m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
3	53m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	63m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
C	75m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	78m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
D	78m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	97m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Red Burn
4	102m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
F	109m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
G	111m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	119m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	120m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	125m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Red Burn
7	141m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Glencryan Burn
8	143m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Glencryan Burn
F	153m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
F	168m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	174m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Red Burn
9	175m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
H	175m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Red Burn
F	206m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	211m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
J	229m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	242m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
10	248m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Glencryan Burn
L	250m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Glencryan Burn
L	250m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	10
----------------------------	-----------

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on [page 33](#) >

This data is sourced from the Ordnance Survey.

7 River flooding

7.1 River flooding

Highest risk on site

Negligible

Highest risk within 50m

Negligible

This is an assessment of flood risk for rivers in Scotland produced using modelled data, provided by Ambiantal Risk Analytics. It also takes account of flood defence information provided by the Scottish Environment Protection Agency (SEPA). It shows the chance of flooding from rivers presented in the following categories:

- 1 in 30 year (3.33%)
- 1 in 100 year (1%)
- 1 in 250 year (0.4%)
- and 1 in 1,000 year (0.1%)

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site. The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiantal Risk Analytics.



8 Coastal flooding - Coastal flooding

8.1 Coastal flooding

Highest risk on site

Negligible

Highest risk within 50m

Negligible

This is an assessment of coastal flood risk in Scotland produced using modelled data, provided by Ambienta Risk Analytics. It also takes account of flood defence information provided by the Scottish Environment Protection Agency (SEPA). It shows the chance of coastal flooding presented in the following categories:

- 1 in 30 year (3.33%)
- 1 in 100 year (1%)
- 1 in 250 year (0.4%)
- and 1 in 1,000 year (0.1%)

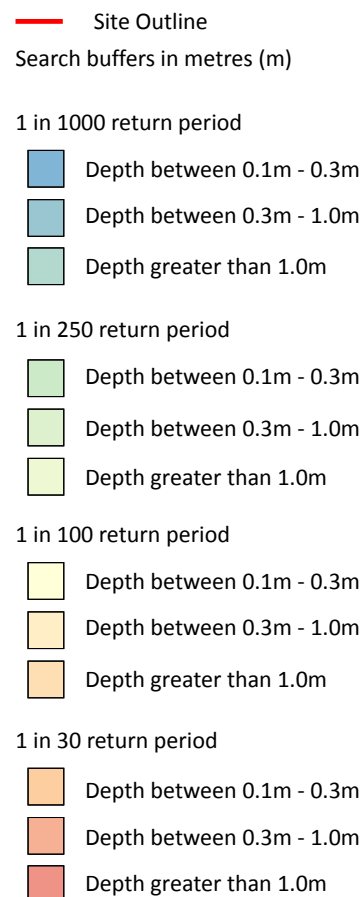
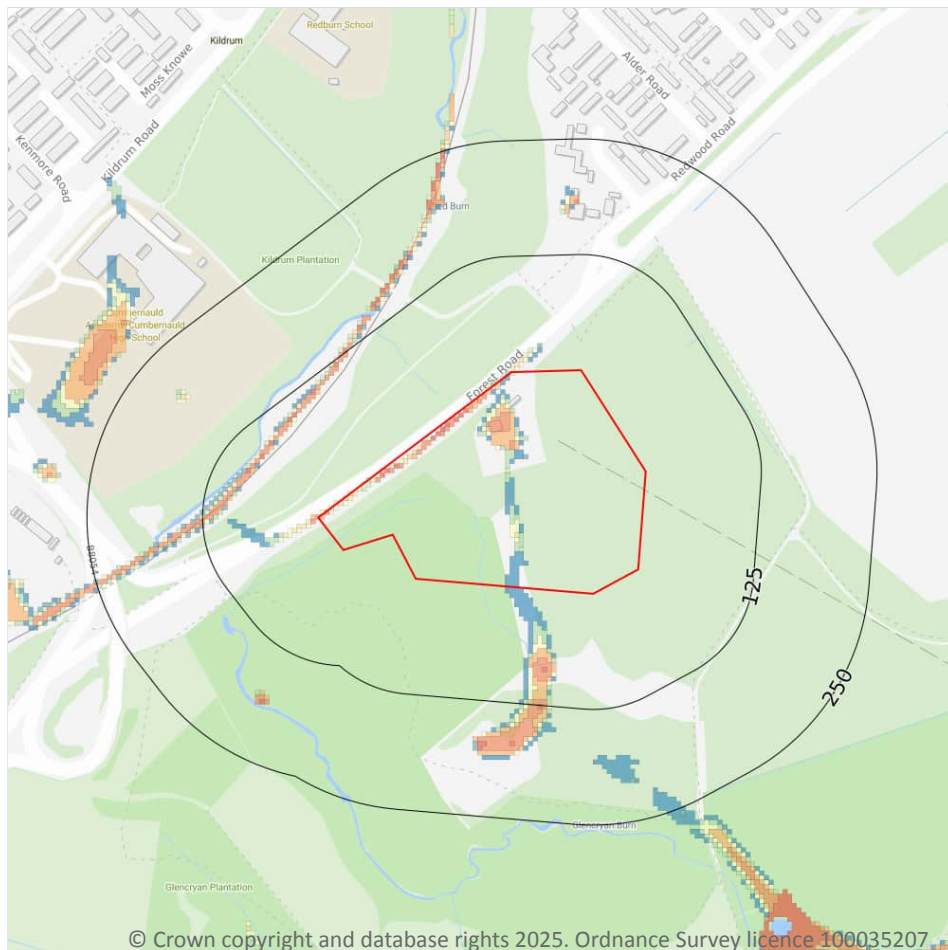
The data shown on the map shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site. The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambienta Risk Analytics.



9 Surface water flooding



9.1 Surface water flooding

Highest risk on site

1 in 30 year, Greater than 1.0m

Highest risk within 50m

1 in 30 year, Greater than 1.0m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on [page 39 >](#)

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on

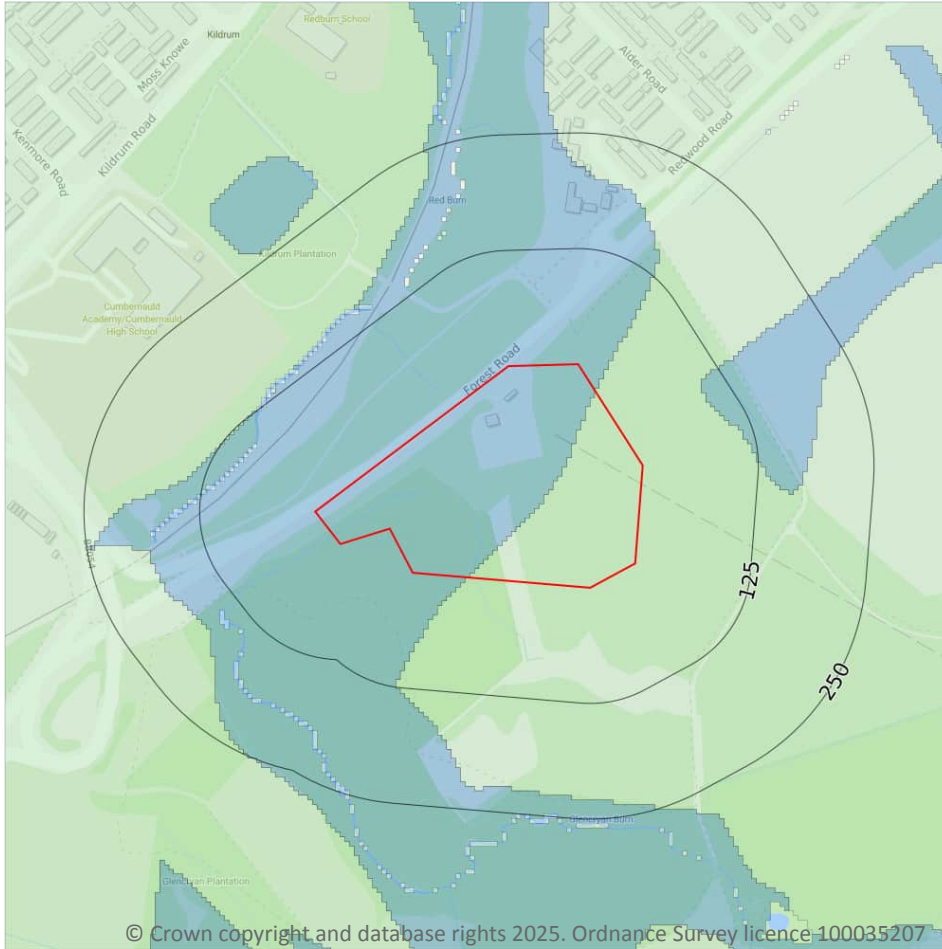
a site. The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Greater than 1.0m

This data is sourced from Ambiental Risk Analytics.



10 Groundwater flooding



— Site Outline
Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

10.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

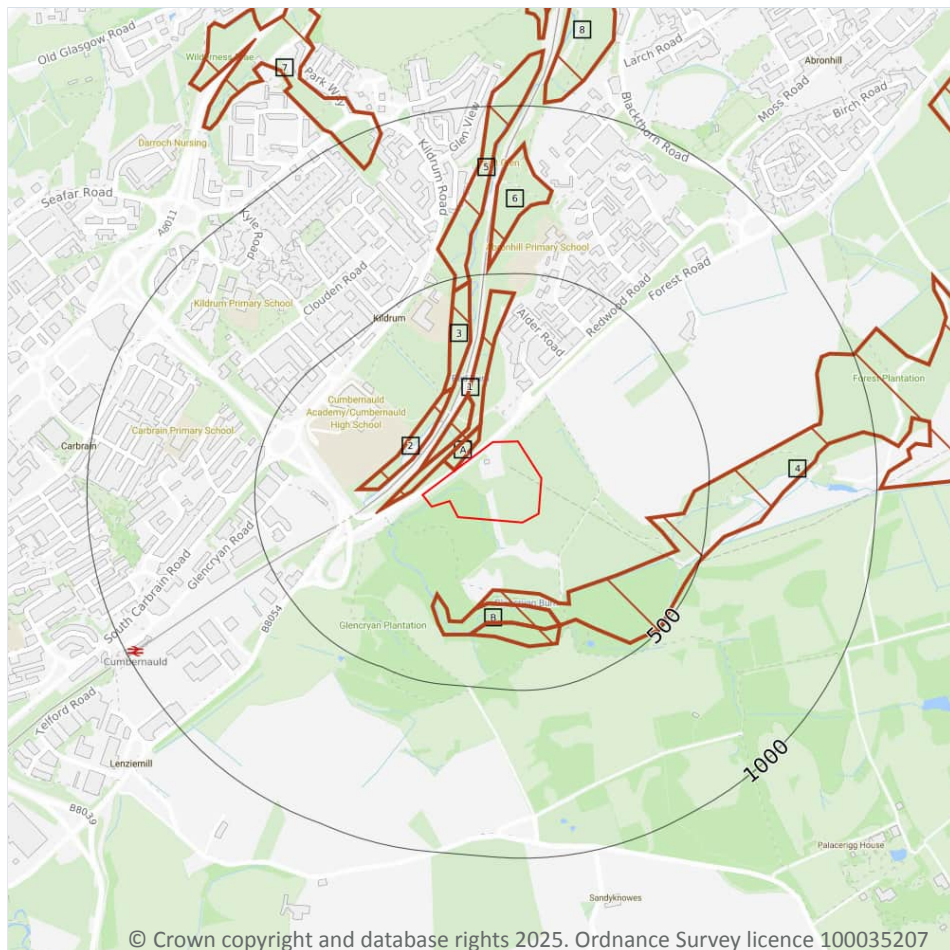
Low

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on [page 41](#) >

This data is sourced from Ambiantal Risk Analytics.

11 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- Special Protection Areas (SPA)
- Designated Ancient Woodland

11.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

1

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on [page 42](#) >

ID	Location	Name	Data source
-	1558m E	Slamannan Plateau	NatureScot



This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.2 Conserved wetland sites (Ramsar sites)

Records within 2000m

0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 Special Areas of Conservation (SAC)

Records within 2000m

0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.4 Special Protection Areas (SPA)

Records within 2000m

2

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

Features are displayed on the Environmental designations map on [page 42 >](#)

ID	Location	Name	Species of interest	Habitat description	Data source
-	1558m E	Slamannan Plateau	Taiga bean goose	Dry grassland, Steppes; Humid grassland, Mesophile grassland; Inland water bodies (Standing water, Running water); Bogs, Marshes, Water fringed vegetation, Fens; Improved grassland	Scottish Natural Heritage
-	1678m E	Slamannan Plateau	Taiga bean goose	Dry grassland, Steppes; Humid grassland, Mesophile grassland; Inland water bodies (Standing water, Running water); Bogs, Marshes, Water fringed vegetation, Fens; Improved grassland	Scottish Natural Heritage

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



11.5 National Nature Reserves (NNR)

Records within 2000m

0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.6 Local Nature Reserves (LNR)

Records within 2000m

0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.7 Designated Ancient Woodland

Records within 2000m

23

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on [page 42](#) >

ID	Location	Name	Woodland Type
A	2m NW	Unknown	Ancient (of semi-natural origin)
1	30m NW	Unknown	Ancient (of semi-natural origin)
A	63m NW	Unknown	Ancient (of semi-natural origin)
2	100m NW	Unknown	Ancient (of semi-natural origin)
3	200m NW	Unknown	Ancient (of semi-natural origin)
4	207m S	Forest Plantation	Long-Established (of plantation origin)
B	239m S	Unknown	Other (on Roy map)
B	300m S	Unknown	Ancient (of semi-natural origin)
5	463m N	Unknown	Ancient (of semi-natural origin)



ID	Location	Name	Woodland Type
6	520m N	Unknown	Ancient (of semi-natural origin)
7	901m NW	Unknown	Long-Established (of plantation origin)
8	1013m N	Unknown	Ancient (of semi-natural origin)
C	1203m N	Crow Wood	Ancient (of semi-natural origin)
C	1279m N	Crow Wood	Other (on Roy map)
-	1428m N	Crow Wood	Ancient (of semi-natural origin)
-	1484m N	Crow Wood	Other (on Roy map)
13	1585m NE	Unknown	Long-Established (of plantation origin)
-	1604m N	Crow Wood	Ancient (of semi-natural origin)
-	1651m S	Unknown	Ancient (of semi-natural origin)
-	1734m NE	Unknown	Ancient (of semi-natural origin)
-	1821m S	Unknown	Ancient (of semi-natural origin)
-	1861m S	Unknown	Ancient (of semi-natural origin)
-	1999m SW	Unknown	Ancient (of semi-natural origin)

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.9 Forest Parks

Records within 2000m

0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.



11.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



12 Visual and cultural designations

12.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

12.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

12.4 Listed Buildings

Records within 250m

0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.



This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12.5 Conservation Areas

Records within 250m

0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12.7 Registered Parks and Gardens

Records within 250m

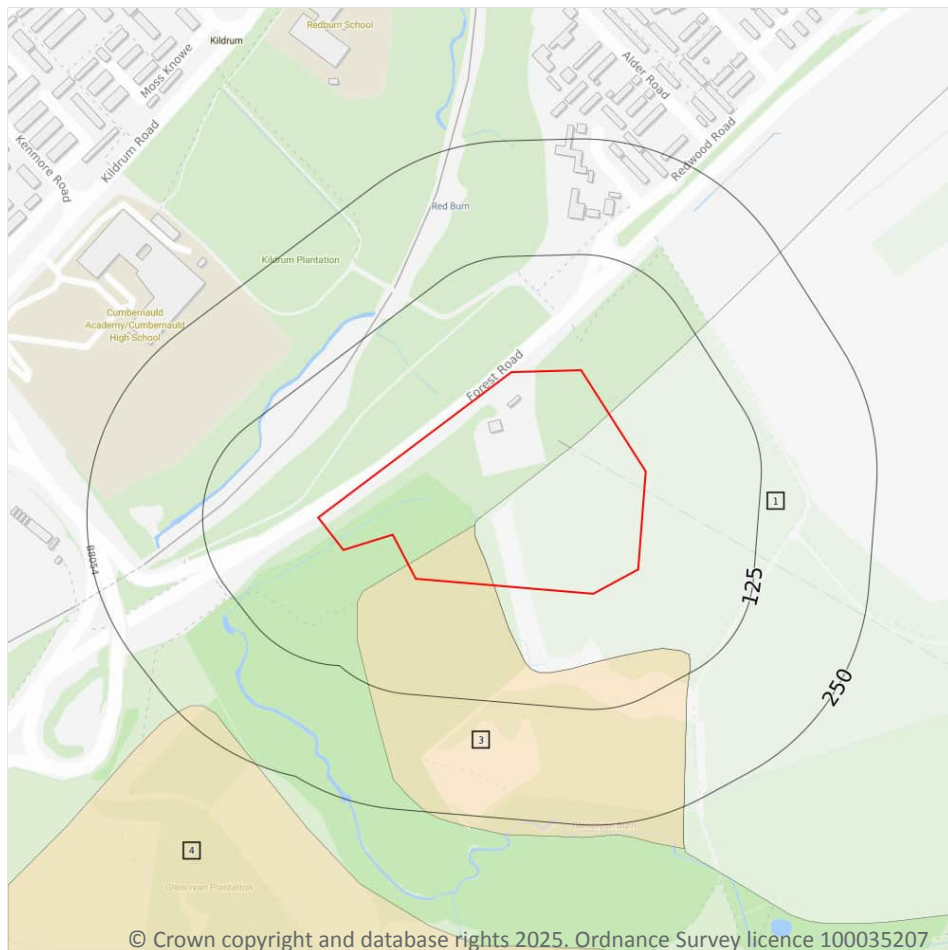
0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



13 Agricultural designations



- Site Outline**
- Search buffers in metres (m)**
- Grade 1 - excellent quality
 - Grade 2 - very good quality
 - Grade 3 - good to moderate quality
 - Grade 4 - good quality
 - Grade 5 - moderate quality
 - Grade 6 - poor quality
 - Grade 7 - very poor quality

13.1 Agricultural Land Classification

Records within 250m

3

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on [page 49](#) >

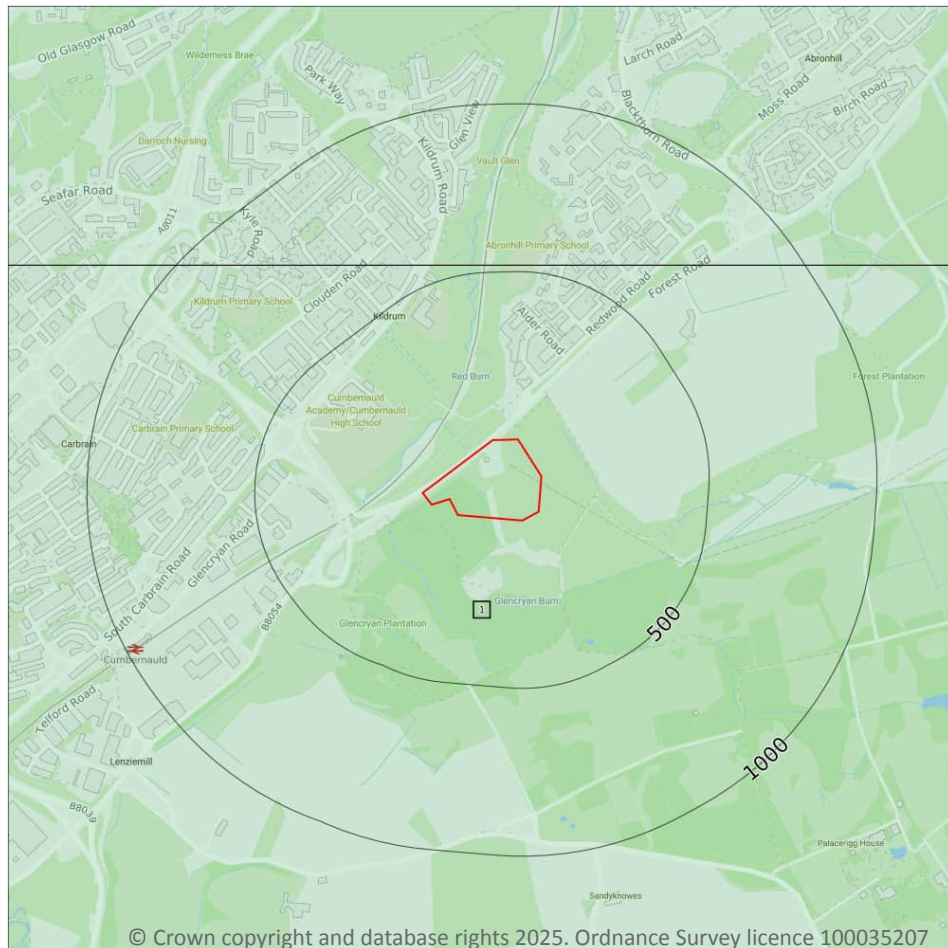
ID	Location	Classification	Description
1	On site	Grade 4.2	Land Suited to Arable Cropping
3	On site	Grade 3.2	Land Suited to Arable Cropping
4	225m SW	Grade 3.2	Land Suited to Arable Cropping



This data is sourced from the James Hutton Institute.



14 Geology 1:10,000 scale - Availability



- Site Outline**
- Search buffers in metres (m)
- Full coverage
 - Partial coverage
 - No coverage

14.1 10k Availability

Records within 500m

1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme. Features are displayed on the Geology 1:10,000 scale - Availability map on [page 51](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	NS77SE

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m

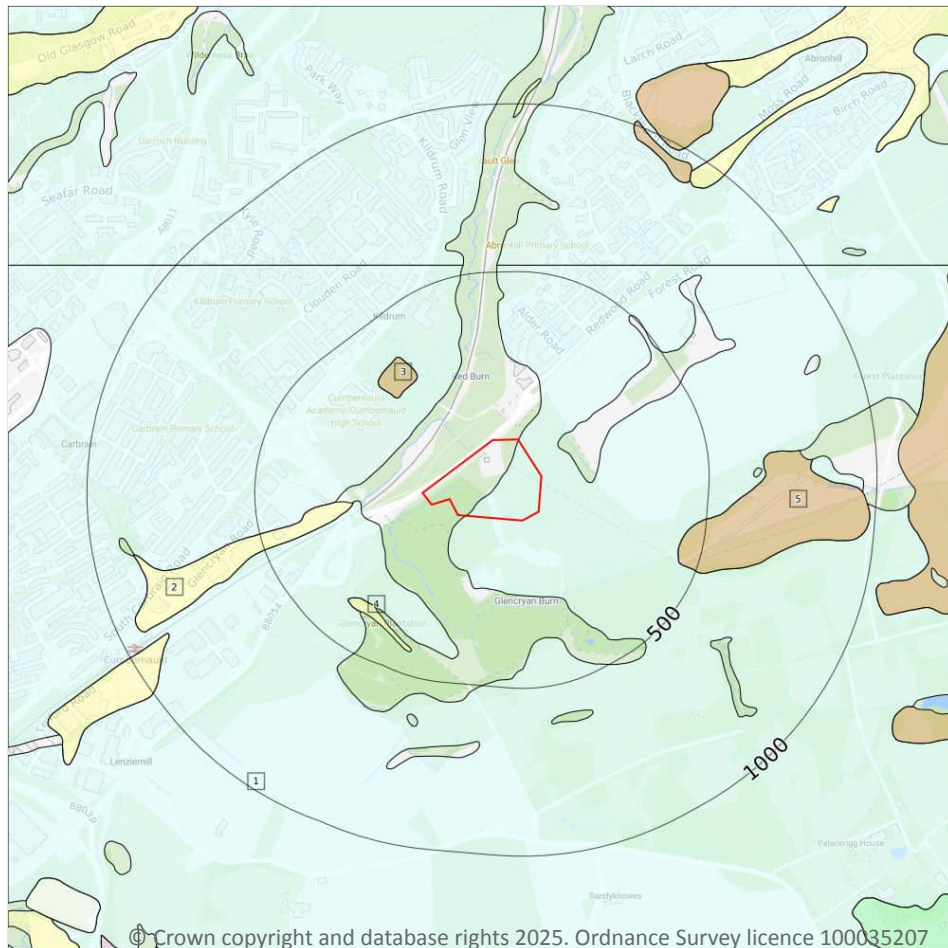
0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

5

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 53](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
2	209m W	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
3	270m NW	PEAT-P	Peat - Peat	Peat



ID	Location	LEX Code	Description	Rock description
4	346m SW	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
5	431m E	PEAT-P	Peat - Peat	Peat

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

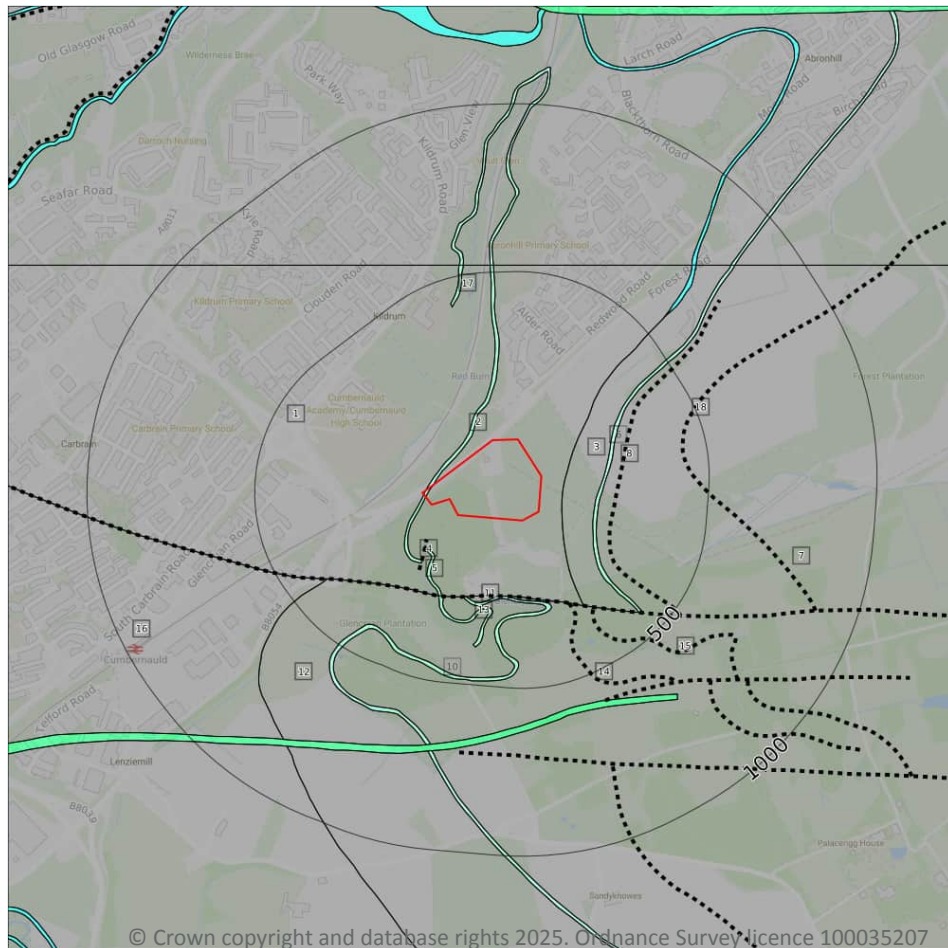
0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

12

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 55 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	ULGS-MDSS	Upper Limestone Formation - Mudstone, Siltstone And Sandstone	Arnsbergian Sub-age - Pendleian Sub-age
2	On site	P2-LMST	Plean No.2 Limestone - Limestone	Arnsbergian Sub-age
3	67m E	PGP-MDSS	Passage Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age - Arnsbergian Sub-age



ID	Location	LEX Code	Description	Rock age
5	124m S	P2-LMST	Plean No.2 Limestone - Limestone	Arnsbergian Sub-age
6	164m E	RCLS-LMST	Roman Cement Limestone - Limestone	Namurian Age
7	175m E	PGP-MDSS	Passage Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age - Arnsbergian Sub-age
10	229m S	RCLS-LMST	Roman Cement Limestone - Limestone	Namurian Age
11	231m S	PGP-MDSS	Passage Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age - Arnsbergian Sub-age
12	237m S	PGP-MDSS	Passage Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age - Arnsbergian Sub-age
13	246m S	P2-LMST	Plean No.2 Limestone - Limestone	Arnsbergian Sub-age
16	382m SW	ULGS-MDSS	Upper Limestone Formation - Mudstone, Siltstone And Sandstone	Arnsbergian Sub-age - Pendleian Sub-age
17	415m N	P2-LMST	Plean No.2 Limestone - Limestone	Arnsbergian Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

6

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

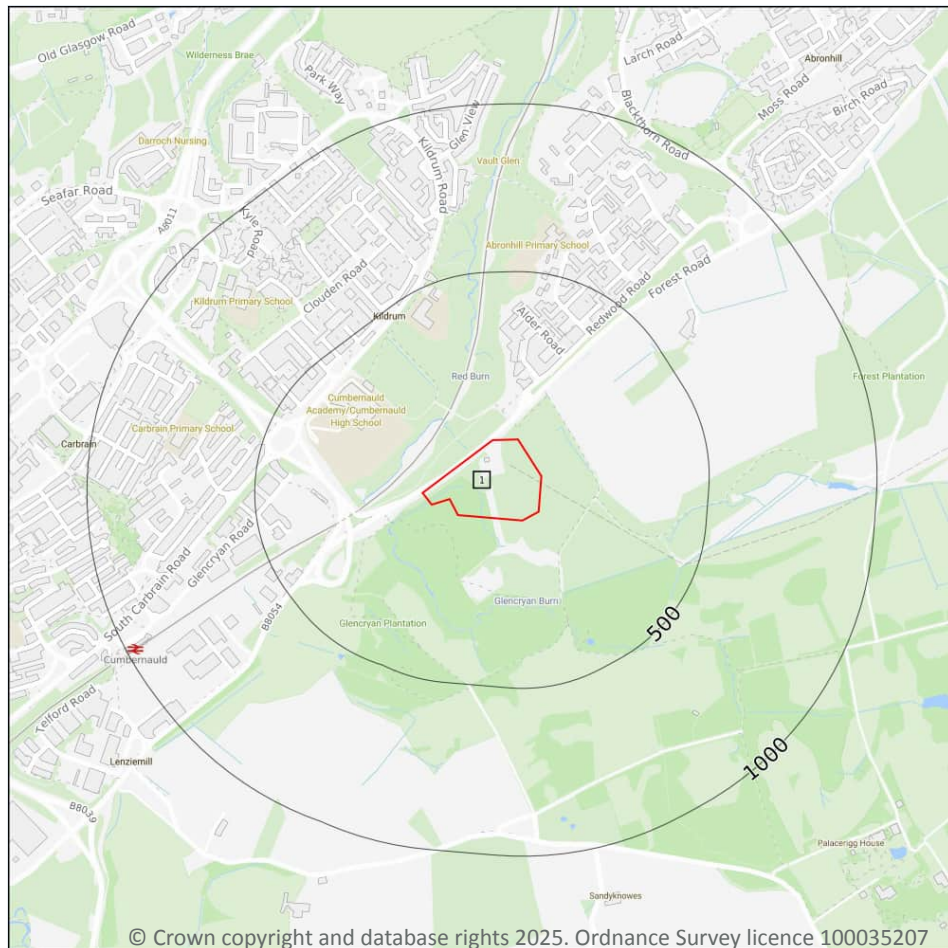
Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 55 >](#)

ID	Location	Category	Description
4	105m S	FAULT	Normal fault, observed; crossmark on downthrow side
8	217m E	ROCK	Coal seam, inferred
9	228m S	FAULT	Normal fault, inferred; crossmarks on downthrow side
14	283m SE	ROCK	Coal seam, inferred
15	328m SE	ROCK	Coal seam, inferred
18	428m E	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Geological map tile

15.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on [page 57](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	SC031w_Airdrie_v4

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m

0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

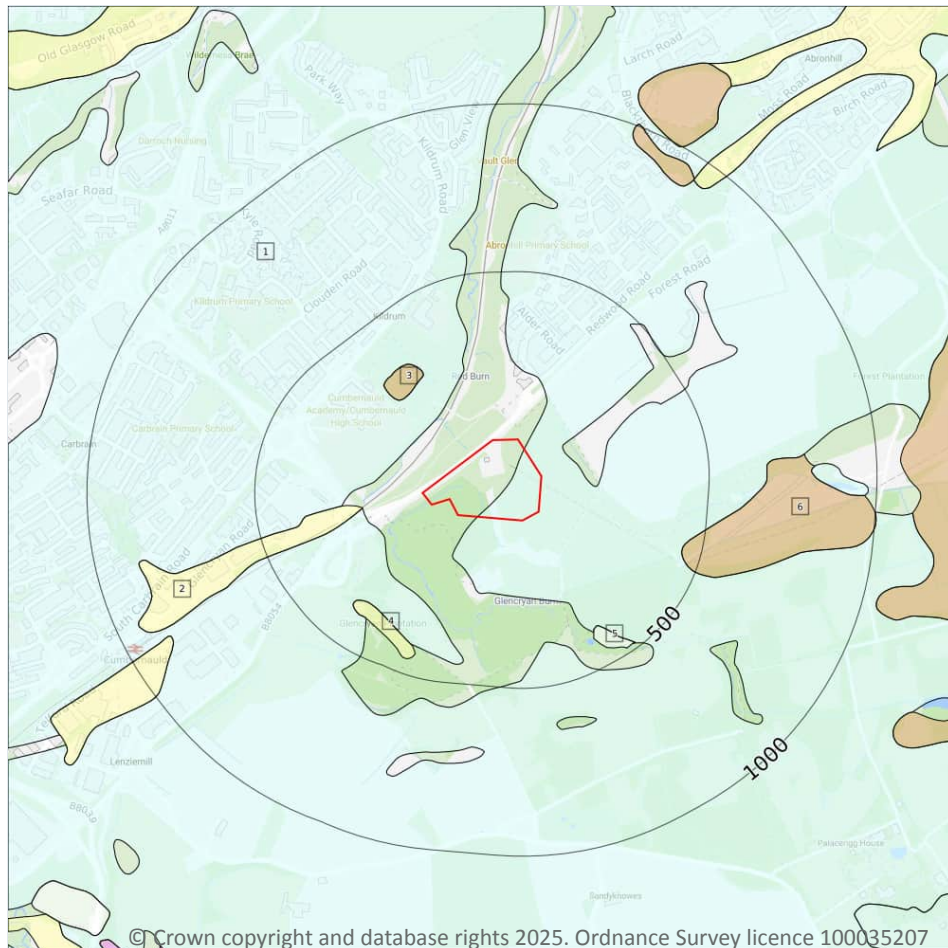
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



- Site Outline
- Search buffers in metres (m)
- Landslip (50k)
- Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

6

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on [page 59](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVANSIAN	DIAMICTON
2	185m W	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	258m NW	PEAT-P	PEAT	PEAT



ID	Location	LEX Code	Description	Rock description
4	347m SW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
5	382m SE	SUPD-SED	SUPERFICIAL DEPOSITS	SEDIMENT
6	442m E	PEAT-P	PEAT	PEAT

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1
---------------------------	----------

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0
----------------------------	----------

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

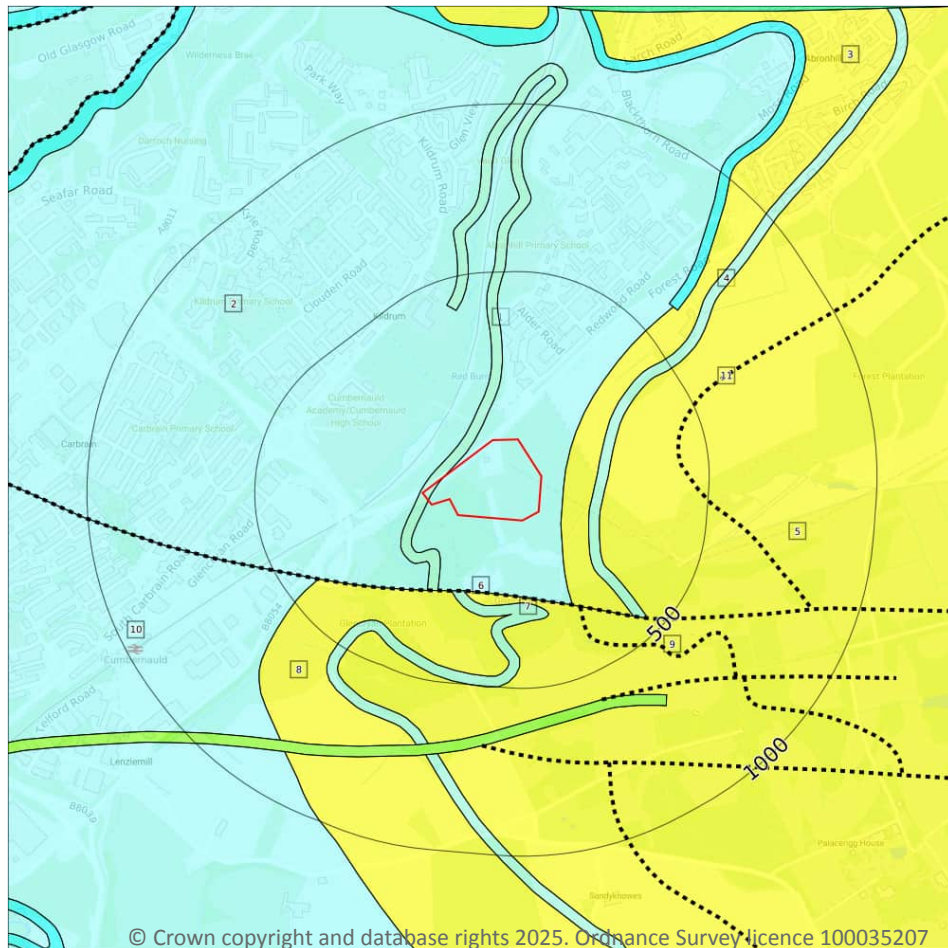
15.7 Landslip permeability (50k)

Records within 50m	0
---------------------------	----------

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

8

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 61](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	P2-LMST	PLEAN NO.2 LIMESTONE - LIMESTONE	NAMURIAN
2	On site	ULGS-CYCC	UPPER LIMESTONE FORMATION - SEDIMENTARY ROCK CYCLES, CLACKMANNAN GROUP TYPE	NAMURIAN
3	69m E	PGP-CYCC	PASSAGE FORMATION - SEDIMENTARY ROCK CYCLES, CLACKMANNAN GROUP TYPE	NAMURIAN



ID	Location	LEX Code	Description	Rock age
4	150m E	RCLS-LMST	ROMAN CEMENT LIMESTONE - LIMESTONE	NAMURIAN
5	182m E	PGP-CYCC	PASSAGE FORMATION - SEDIMENTARY ROCK CYCLES, CLACKMANNAN GROUP TYPE	NAMURIAN
7	223m S	RCLS-LMST	ROMAN CEMENT LIMESTONE - LIMESTONE	NAMURIAN
8	226m S	PGP-CYCC	PASSAGE FORMATION - SEDIMENTARY ROCK CYCLES, CLACKMANNAN GROUP TYPE	NAMURIAN
10	402m SW	ULGS-CYCC	UPPER LIMESTONE FORMATION - SEDIMENTARY ROCK CYCLES, CLACKMANNAN GROUP TYPE	NAMURIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	3
---------------------------	----------

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	High	Low
On site	Fracture	High	High
8m NW	Fracture	High	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	3
----------------------------	----------

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 61](#) >

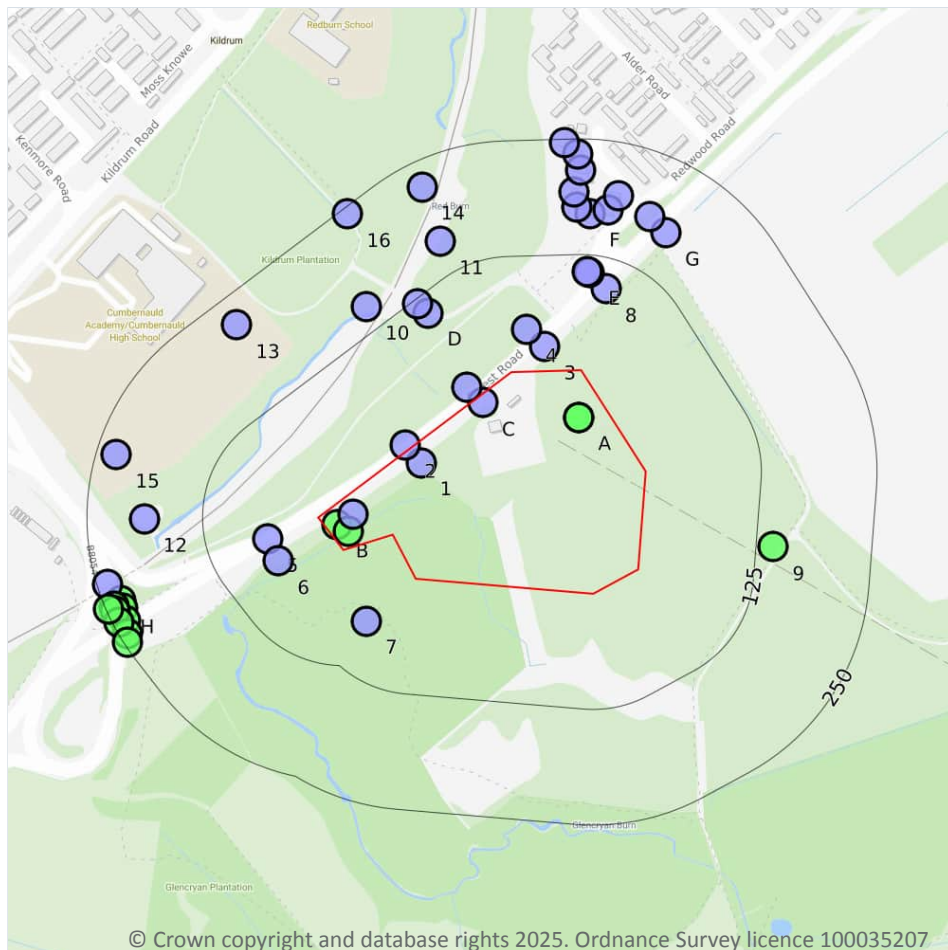
ID	Location	Category	Description
6	223m S	FAULT	Fault, inferred, displacement unknown
9	308m SE	ROCK	Coal seam, inferred
11	413m E	ROCK	Coal seam, inferred



This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m

47

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on [page 64](#) >

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	277359 674381	ABRONHILL WHITELESS B6	3.0	N	989785 ↗
A	On site	277530 674430	CUMBERNAULD TOWER 1 BORE 1	22.0	N	988305 ↗



ID	Location	Grid reference	Name	Length	Confidential	Web link
A	On site	277530 674430	CUMBERNAULD TOWER 1 BORE 2	20.0	N	988306 ↗
B	On site	277268 674314	CUMBERNAULD FORREST ROAD 1	19.0	N	988723 ↗
B	On site	277281 674307	CUMBERNAULD FORREST ROAD 2	12.0	N	988724 ↗
B	On site	277286 674325	ABRONHILL WHITELESS B4	3.0	N	989783 ↗
C	On site	277426 674446	ABRONHILL WHITELESS B8	3.0	N	989787 ↗
2	6m NW	277342 674400	ABRONHILL WHITELESS B3	2.0	N	989782 ↗
C	16m NW	277409 674463	ABRONHILL WHITELESS B5	3.0	N	989784 ↗
3	27m N	277493 674507	ABRONHILL WHITELESS B10	5.0	N	989802 ↗
4	46m N	277473 674525	ABRONHILL WHITELESS B7	2.0	N	989786 ↗
5	60m W	277193 674299	ABRONHILL WHITELESS B1	5.0	N	989780 ↗
6	63m SW	277205 674275	ABRONHILL WHITELESS B2	2.0	N	989781 ↗
7	70m SW	277300 674210	CUMBERNAULD 12 C/05/45	3.96	N	18372594 ↗
8	92m N	277559 674569	ABRONHILL WHITELESS B12	3.0	N	989804 ↗
D	105m NW	277367 674543	ABRONHILL WHITELES BH7840/7695	6.0	N	989779 ↗
E	106m N	277541 674587	ABRONHILL WHITELESS B9	1.0	N	989788 ↗
E	107m N	277539 674588	ABRONHILL WHITELESS B11	3.0	N	989803 ↗
D	120m NW	277355 674553	ABRONHILL WHITELES BH7855/7681	6.0	N	989778 ↗
9	144m E	277740 674290	CUMBERNAULD TOWER 2 BORE 3	27.0	N	988307 ↗
10	151m NW	277300 674550	CUMBERNAULD 12 C/95/40	5.48	N	18372583 ↗
11	161m NW	277380 674620	CUMBERNAULD 7 C/OS/39	3.96	N	18359423 ↗
F	169m N	277542 674650	ABRONHILL 8	4.0	N	988853 ↗
G	175m NE	277624 674630	ABRONHILL WHITELESS B14	5.0	N	989806 ↗
F	175m N	277561 674654	ABRONHILL 9	4.0	N	988854 ↗
F	176m N	277527 674657	ABRONHILL 7	4.0	N	988852 ↗
G	182m NE	277606 674647	ABRONHILL WHITELESS B13	4.0	N	989805 ↗
12	188m W	277060 674320	CUMBERNAULD 11 C/05/40	3.04	N	18372569 ↗

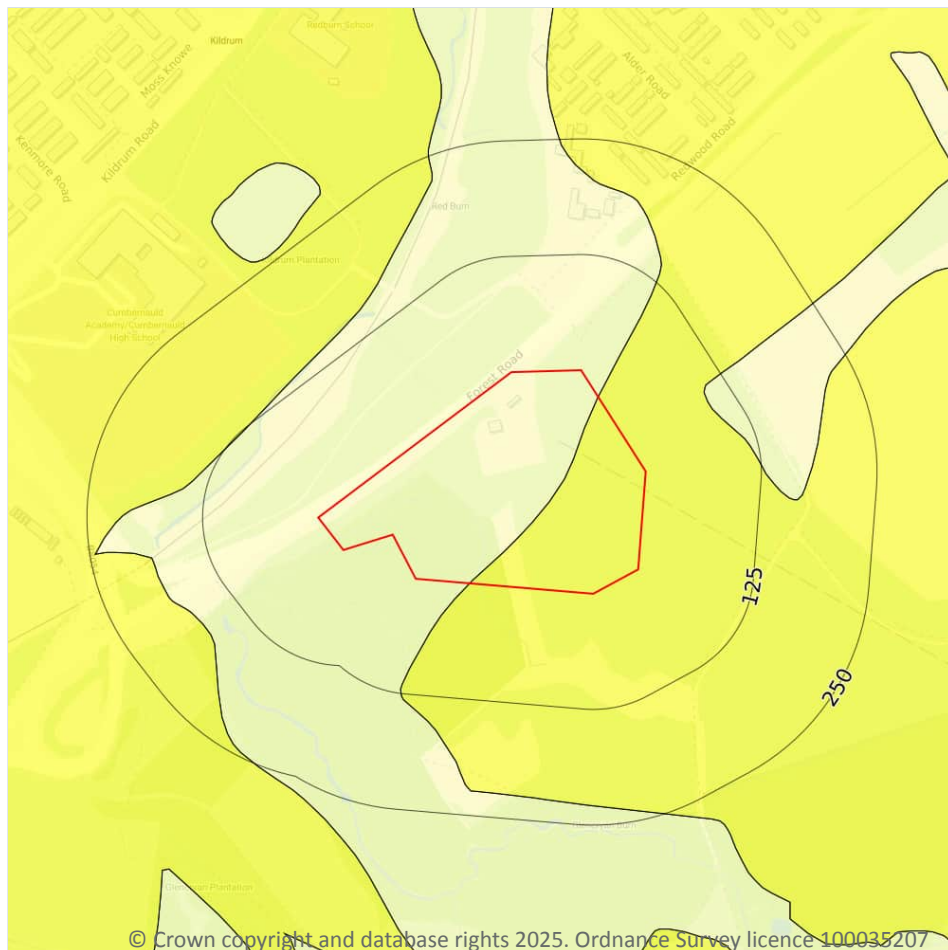


ID	Location	Grid reference	Name	Length	Confidential	Web link
F	193m N	277524 674674	ABRONHILL 6	4.0	N	988851 ↗
F	193m N	277573 674670	ABRONHILL 10	4.0	N	988855 ↗
F	216m N	277532 674697	ABRONHILL 5	4.0	N	988850 ↗
13	219m NW	277160 674530	CUMBERNAULD SCHOOL	9.0	N	988006 ↗
14	222m NW	277360 674679	CUMBERNAULD ORIGINAL D16	1.0	N	989386 ↗
15	229m W	277030 674390	CUMBERNAULD SCHOOL	9.0	N	988007 ↗
H	231m SW	277035 674232	GREENYARDS INTERCHANGE G103	13.0	N	989491 ↗
H	233m SW	277037 674224	GREENYARDS INTERCHANGE G106	13.0	N	989494 ↗
F	234m N	277529 674715	ABRONHILL 4	4.0	N	988849 ↗
H	236m SW	277040 674211	GREENYARDS INTERCHANGE G109	12.0	N	989497 ↗
H	239m W	277020 674250	CUMBERNAULD CARBRAIN FARM AREA 2 C30	5.1	N	18461657 ↗
H	240m SW	277028 674226	GREENYARDS INTERCHANGE G102	13.0	N	989490 ↗
H	241m SW	277029 674221	GREENYARDS INTERCHANGE G105	13.0	N	989493 ↗
H	241m SW	277042 674196	GREENYARDS INTERCHANGE G112	13.0	N	989500 ↗
H	243m SW	277033 674209	GREENYARDS INTERCHANGE G108	12.0	N	989496 ↗
16	243m NW	277280 674650	CUMBERNAULD KILDRUM PLANTATION D	4.57	N	18373721 ↗
H	246m SW	277042 674187	GREENYARDS INTERCHANGE G115	16.0	N	989503 ↗
F	246m N	277514 674727	ABRONHILL 3	4.0	N	988848 ↗
H	248m SW	277021 674223	GREENYARDS INTERCHANGE G101	13.0	N	989489 ↗

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



- Site Outline**
- Search buffers in metres (m)**
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.1 Shrink swell clays

Records within 50m

2

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

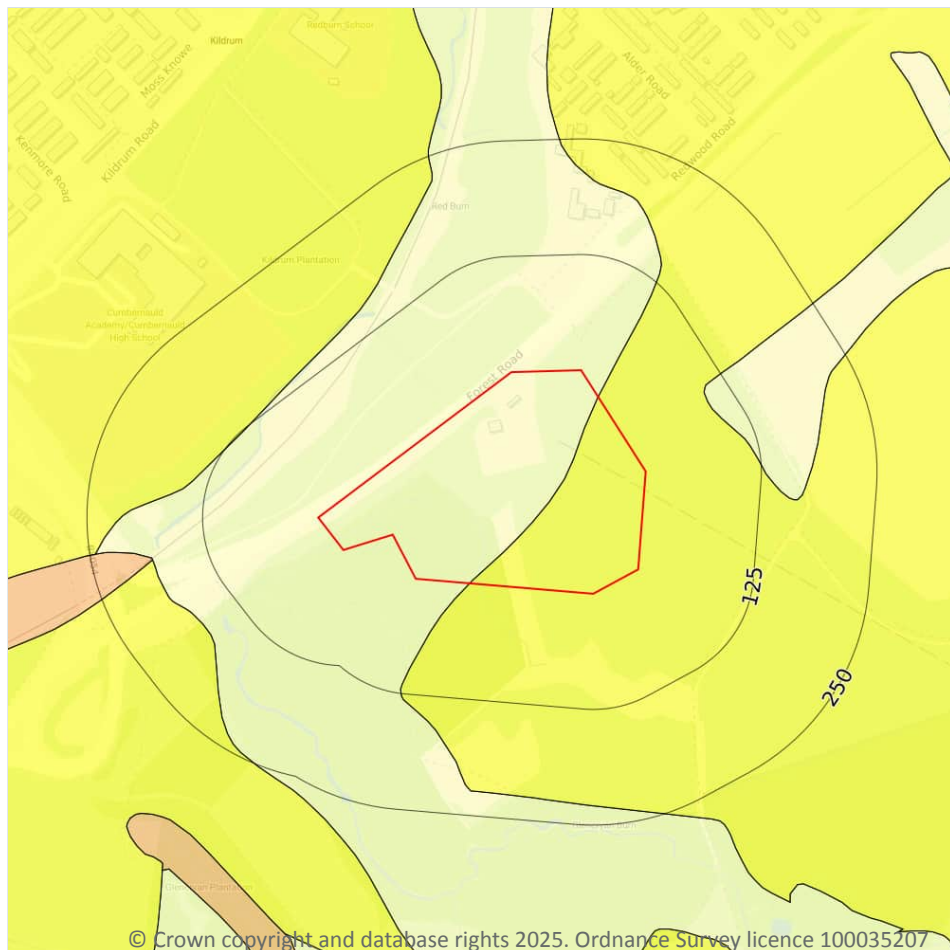
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 67 >](#)

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.
On site	Very low	Ground conditions predominantly low plasticity.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.2 Running sands

Records within 50m

2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on [page 68](#) >

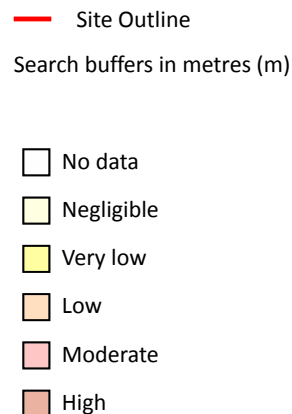
Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



17.3 Compressible deposits

Records within 50m

1

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

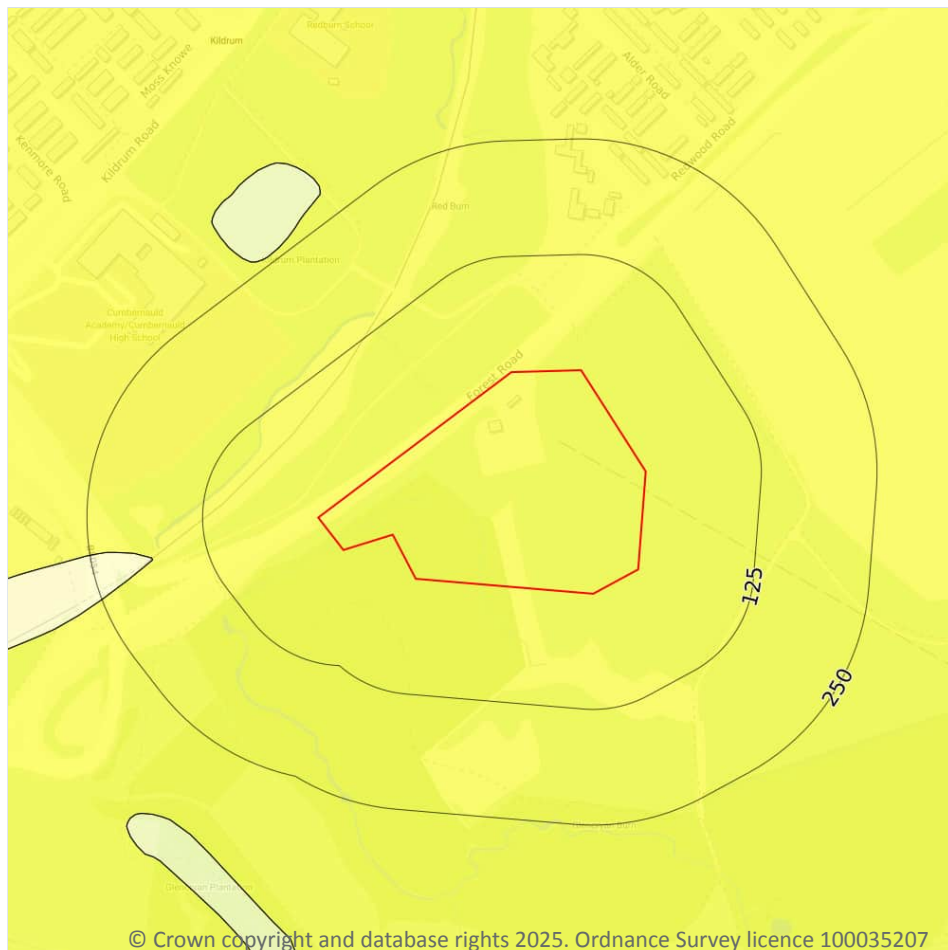
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 70 >](#)

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.4 Collapsible deposits

Records within 50m

1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

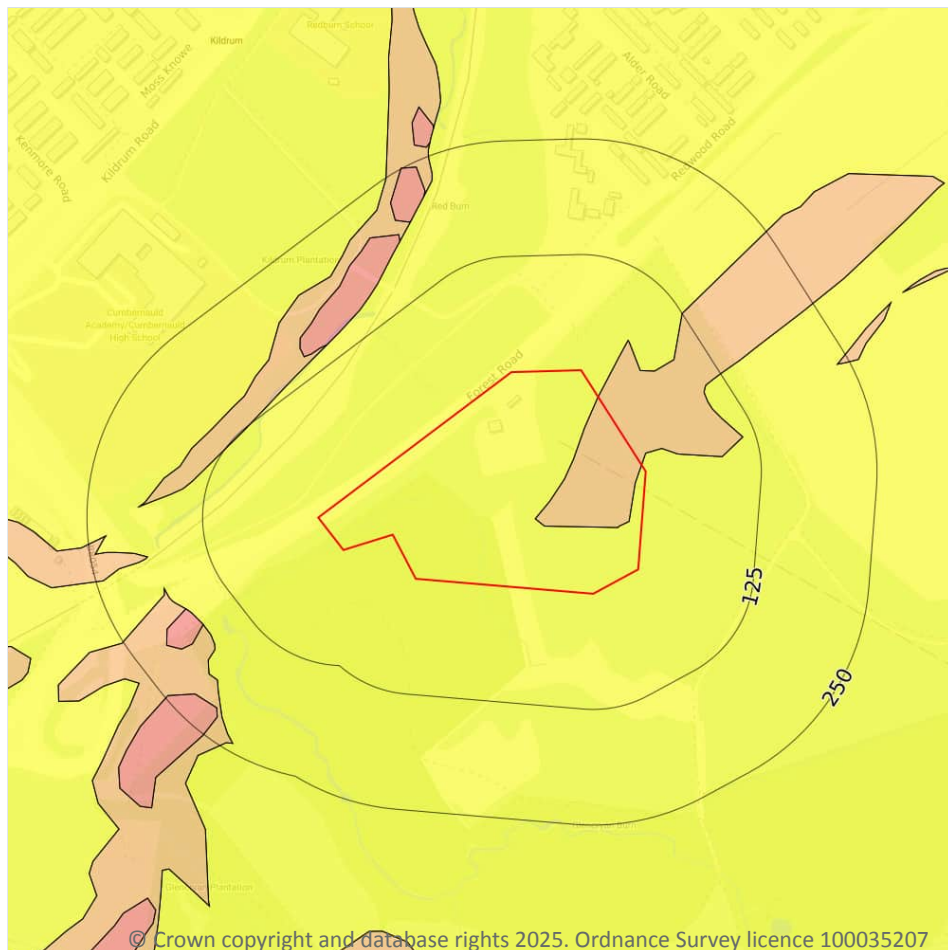
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 71 >](#)

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.5 Landslides

Records within 50m

2

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on [page 72 >](#)

Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

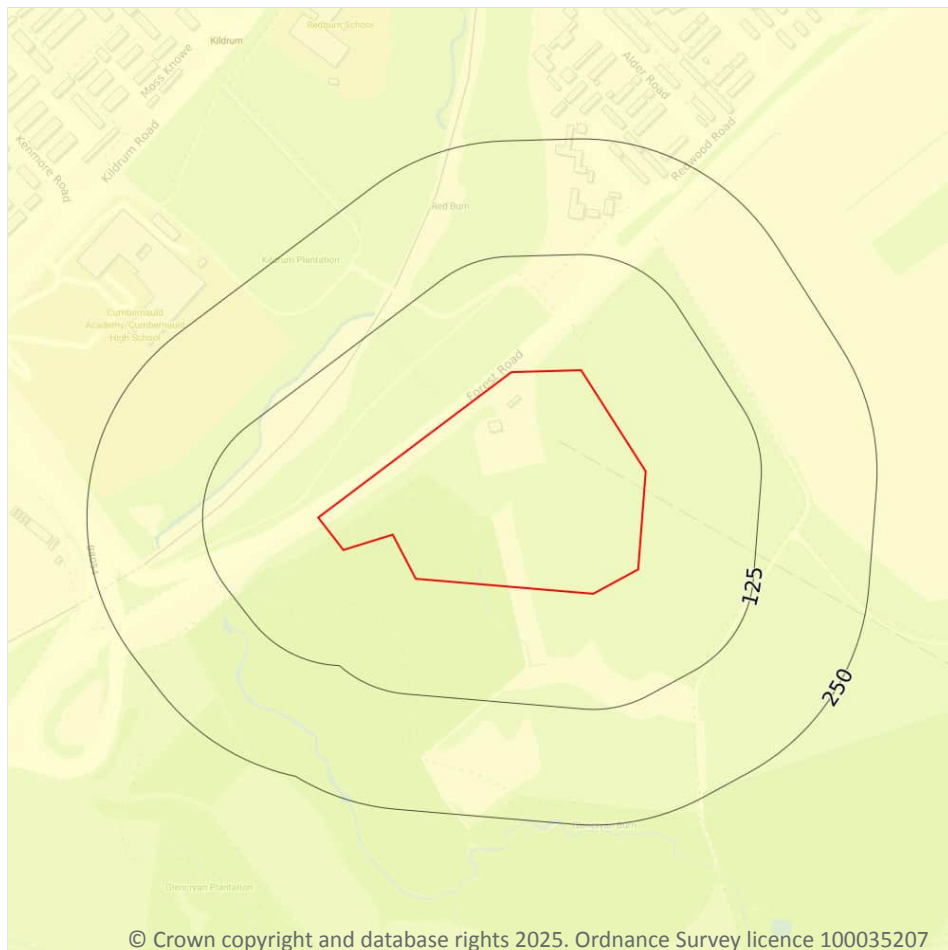


Location	Hazard rating	Details
On site	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



- Site Outline**
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.6 Ground dissolution of soluble rocks

Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

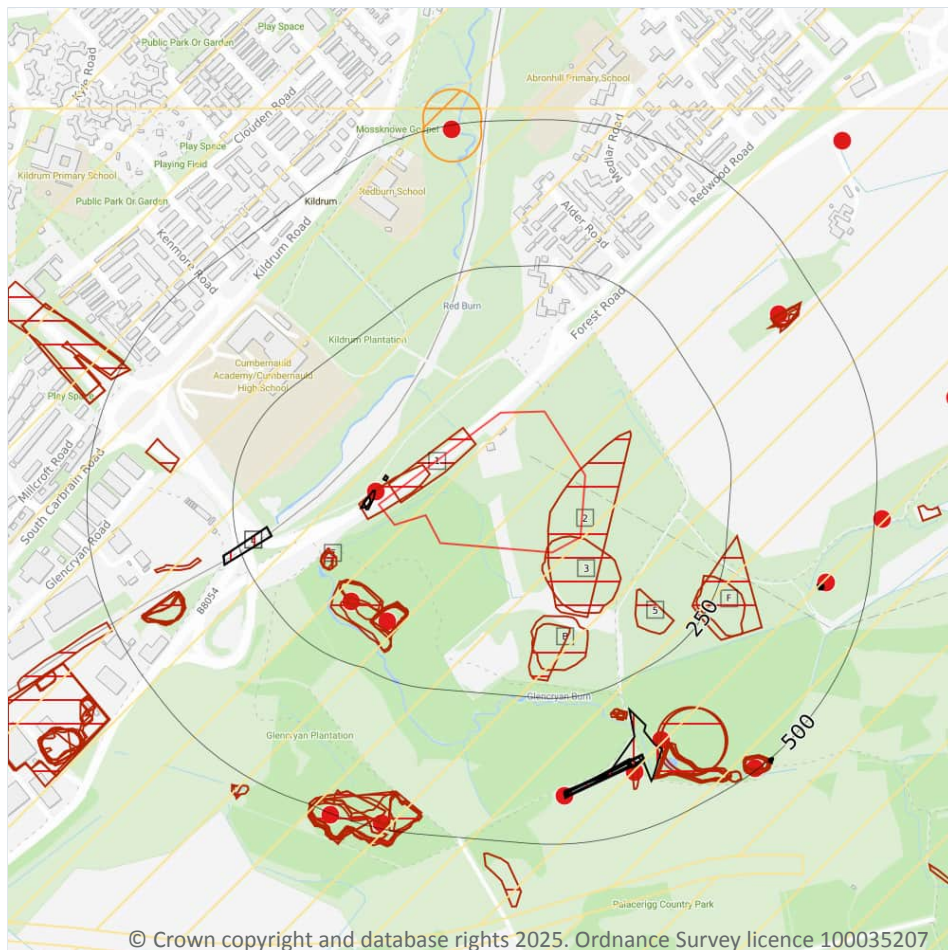
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 74](#) >

Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

This data is sourced from the British Geological Survey.



18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
 - Sporadic underground mining of restricted extent possible
 - Localised small scale underground mining possible
 - Small scale mining possible
 - Underground mining known or likely within or in close proximity
 - Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m

15

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining and ground workings map on [page 76 >](#)

ID	Location	Details	Description
A	21m NW	Name: Greenyards Fireclay Mine Address: Palacerigg, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: Working is wholly underground, access by shaft, adit, drift or incline. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots). May also be locally termed 'Quarry' or 'Underground Quarry' when referring to sites extracting building stone (e.g. in Dorset and Wiltshire). The location given is that of the mine entrance and may be approximate for older sites shown on contemporaneous mapping by the Geological Survey used as the source document. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
D	150m SW	Name: Greenyards Fireclay Mine Address: Palacerigg, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: Working is wholly underground, access by shaft, adit, drift or incline. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots). May also be locally termed 'Quarry' or 'Underground Quarry' when referring to sites extracting building stone (e.g. in Dorset and Wiltshire). The location given is that of the mine entrance and may be approximate for older sites shown on contemporaneous mapping by the Geological Survey used as the source document. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
D	163m SW	Name: Greenyards Address: Lenziemill, CUMBERNAULD, Lanarkshire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.



ID	Location	Details	Description
H	371m SE	Name: Cumbernauld Fireclay Mine Address: Lenziemill, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: Working is wholly underground, access by shaft, adit, drift or incline. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots). May also be locally termed 'Quarry' or 'Underground Quarry' when referring to sites extracting building stone (e.g. in Dorset and Wiltshire). The location given is that of the mine entrance and may be approximate for older sites shown on contemporaneous mapping by the Geological Survey used as the source document. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
H	394m SE	Name: Cumbernauld Fireclay Mine Address: Lenziemill, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: Working is wholly underground, access by shaft, adit, drift or incline. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots). May also be locally termed 'Quarry' or 'Underground Quarry' when referring to sites extracting building stone (e.g. in Dorset and Wiltshire). The location given is that of the mine entrance and may be approximate for older sites shown on contemporaneous mapping by the Geological Survey used as the source document. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
H	401m S	Name: Cumbernauld Fireclay Workings Address: Lenziemill, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.



ID	Location	Details	Description
8	417m S	Name: Cumbernauld Fireclay Mine No. 2 Address: Lenziemill, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: Working is wholly underground, access by shaft, adit, drift or incline. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots). May also be locally termed 'Quarry' or 'Underground Quarry' when referring to sites extracting building stone (e.g. in Dorset and Wiltshire). The location given is that of the mine entrance and may be approximate for older sites shown on contemporaneous mapping by the Geological Survey used as the source document. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
K	427m E	Name: Cumbernauld Fireclay Mine Air Shaft No. 1 Address: Palacerigg, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: Working is wholly underground, access by shaft, adit, drift or incline. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots). May also be locally termed 'Quarry' or 'Underground Quarry' when referring to sites extracting building stone (e.g. in Dorset and Wiltshire). The location given is that of the mine entrance and may be approximate for older sites shown on contemporaneous mapping by the Geological Survey used as the source document. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
J	428m NE	Name: Mid Forest Mine Address: Abrohill, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: Working is wholly underground, access by shaft, adit, drift or incline. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots). May also be locally termed 'Quarry' or 'Underground Quarry' when referring to sites extracting building stone (e.g. in Dorset and Wiltshire). The location given is that of the mine entrance and may be approximate for older sites shown on contemporaneous mapping by the Geological Survey used as the source document. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.



ID	Location	Details	Description
J	438m NE	Name: Mid Forest Quarry Address: Mid Forest, Abrohill, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
J	438m NE	Name: Mid Forest Quarry Address: Mid Forest, Abrohill, CUMBERNAULD, Lanarkshire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
J	448m NE	Name: Mid Forest Mine Address: Mid Forest Farm, Abrohill, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: Working is wholly underground, access by shaft, adit, drift or incline. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots). May also be locally termed 'Quarry' or 'Underground Quarry' when referring to sites extracting building stone (e.g. in Dorset and Wiltshire). The location given is that of the mine entrance and may be approximate for older sites shown on contemporaneous mapping by the Geological Survey used as the source document. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
L	490m S	Name: Glencryan Quarry Address: Lenziemill, CUMBERNAULD, Lanarkshire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.



ID	Location	Details	Description
M	492m N	Name: Kildrum Limestone Mine Address: Kildrum, CUMBERNAULD, Lanarkshire Commodity: Limestone Status: Ceased	Type: Working is wholly underground, access by shaft, adit, drift or incline. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun' Ee' - Scots). May also be locally termed 'Quarry' or 'Underground Quarry' when referring to sites extracting building stone (e.g. in Dorset and Wiltshire). The location given is that of the mine entrance and may be approximate for older sites shown on contemporaneous mapping by the Geological Survey used as the source document. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
N	497m SE	Name: Glencryan Dam Address: Lenziemill, CUMBERNAULD, Lanarkshire Commodity: Fireclay Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	23
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Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on [page 76](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
1	On site	Cuttings	1990	1:10000
2	On site	Unspecified Ground Workings	1990	1:10000
3	On site	Refuse Heap	1975	1:10000
A	On site	Cuttings	1972	1:10560
A	12m NW	Unspecified Old Level	1897	1:10560
A	15m W	Unspecified Old Level	1914	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
A	25m NW	Unspecified Old Level	1899	1:10560
B	109m S	Refuse Heap	1975	1:10000
C	111m SW	Unspecified Heap	1922	1:10560
C	113m SW	Refuse Heap	1922	1:10560
C	113m SW	Unspecified Heap	1914	1:10560
D	116m SW	Unspecified Heap	1972	1:10560
D	116m SW	Unspecified Heap	1922	1:10560
D	118m SW	Unspecified Old Quarry	1914	1:10560
B	122m S	Unspecified Heap	1990	1:10000
D	125m SW	Unspecified Old Quarry	1922	1:10560
D	125m SW	Unspecified Old Quarry	1972	1:10560
D	126m SW	Unspecified Old Quarry	1922	1:10560
D	129m SW	Unspecified Old Quarry	1897	1:10560
D	132m SW	Unspecified Old Quarry	1899	1:10560
5	133m SE	Unspecified Heap	1990	1:10000
F	222m E	Refuse Heap	1975	1:10000
F	222m SE	Unspecified Heap	1990	1:10000

This data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m

24

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining and ground workings map on [page 76 >](#)

ID	Location	Land Use	Year of mapping	Mapping scale
A	12m NW	Unspecified Old Level	1897	1:10560
A	15m W	Unspecified Old Level	1914	1:10560
A	25m NW	Unspecified Old Level	1899	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
E	192m W	Tunnel	1990	1:10000
E	192m W	Tunnel	1975	1:10000
H	300m SE	Unspecified Mine	1922	1:10560
H	378m S	Tunnel	1922	1:10560
H	379m S	Adit	1990	1:10000
H	379m SE	Tunnel	1972	1:10560
H	379m SE	Tunnel	1914	1:10560
H	379m SE	Tunnel	1897	1:10560
H	381m SE	Tunnel	1899	1:10560
H	382m S	Tunnel	1922	1:10560
K	414m E	Unspecified Mine	1972	1:10560
K	417m E	Unspecified Mine	1922	1:10560
K	419m E	Unspecified Mine	1922	1:10560
N	499m SE	Air Shaft	1899	1:10560
N	501m SE	Air Shaft	1897	1:10560
N	501m SE	Air Shaft	1914	1:10560
S	647m E	Air Shaft	1922	1:10560
S	647m E	Air Shaft	1990	1:10000
S	647m E	Air Shaft	1972	1:10560
S	647m E	Air Shaft	1975	1:10000
-	650m E	Air Shaft	1922	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m

0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.



18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

4

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on [page 76 >](#)

ID	Location	Name	Commodity	Class	Likelihood
4	On site	Not available	Vein Mineral	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
M	437m N	Kildrum	Limestone/Vein Mineral	C	Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.
10	519m N	Not available	Vein Mineral	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
M	522m N	Kildrum	Limestone/Vein Mineral	C	Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.

This data is sourced from the British Geological Survey.



18.7 JPB mining areas

Records on site

0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m

0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m

0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m

0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.



18.11 BGS mine plans

Records within 500m

0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site

1

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site

0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site

0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.



18.15 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

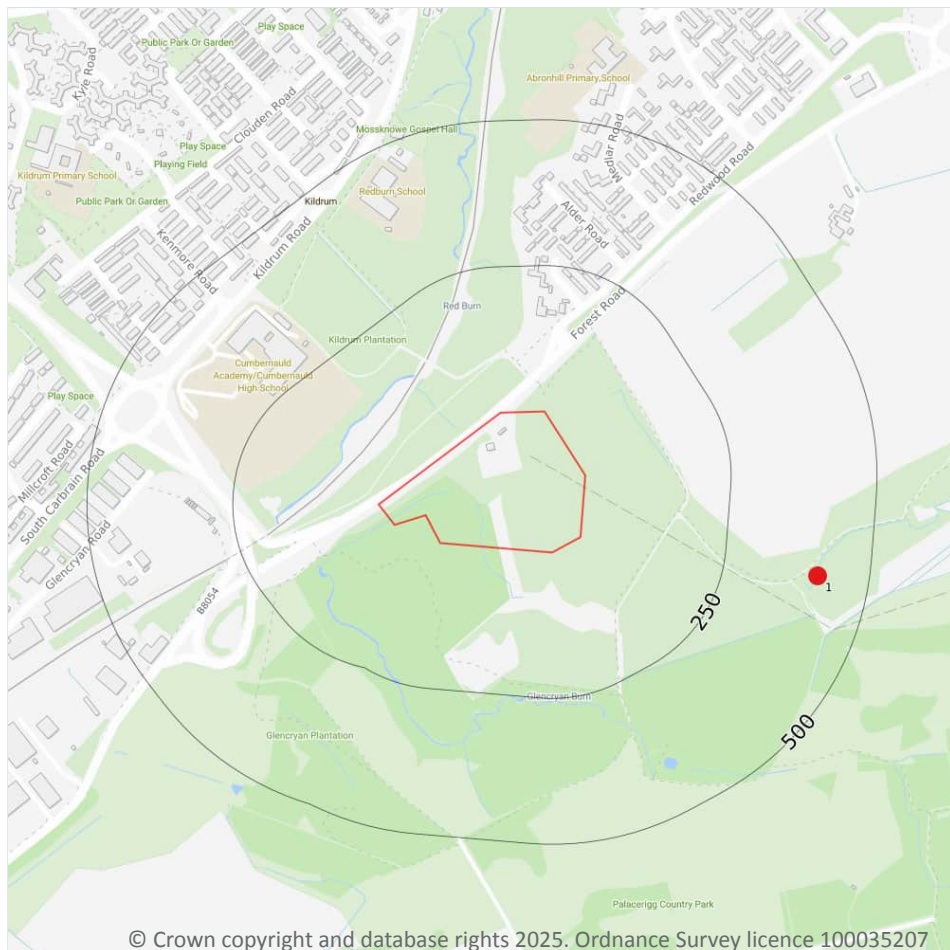
Records on site	0
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Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).



19 Ground cavities and sinkholes



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- Mining cavities
- Reported recent incidents
- Historical incidents

19.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m

1

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

Features are displayed on the Ground cavities and sinkholes map on [page 88](#) >

ID	Location	Mine Address	Mineral
1	412m E	Glencryan, Strathclyde	Fireclay

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m

0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m

0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.



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- 90

This data is sourced from the British Geological Survey and UK Health Security Agency.



21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m

10

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
8m NW	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
19m N	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
19m N	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
20m N	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
42m NW	15 mg/kg	-	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m

20

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).



Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
On site	1	0.2	185	127	0.8	23	73	2	6
On site	1	0.2	176	121	0.6	29	70	3	7
On site	1	0.2	341	234	0.6	25	164	2	65
On site	1	0.2	320	220	0.6	31	154	4	58
On site	1	0.2	81	56	0.5	35	40	4	5
On site	2	0.3	228	157	0.5	45	108	8	33
On site	2	0.3	97	67	0.6	42	45	7	6
On site	3	0.5	105	72	0.6	52	48	11	7
On site	3	0.5	187	128	0.6	55	81	12	16
On site	3	0.5	213	146	0.7	58	88	14	17
On site	3	0.5	204	140	0.6	62	83	15	17
On site	4	0.7	166	114	0.4	73	60	22	13
4m E	4	0.7	168	115	0.3	74	56	22	12
14m NE	4	0.7	155	106	0.5	70	60	20	13
19m N	4	0.7	176	121	0.4	68	65	19	15
20m N	4	0.7	110	76	0.7	63	51	16	7
31m NW	2	0.3	181	124	0.6	42	65	7	8
39m S	2	0.3	172	118	0.6	51	76	10	15
43m S	1	0.2	76	52	0.5	33	39	4	5
48m W	1	0.2	56	38	0.6	34	35	4	5

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m

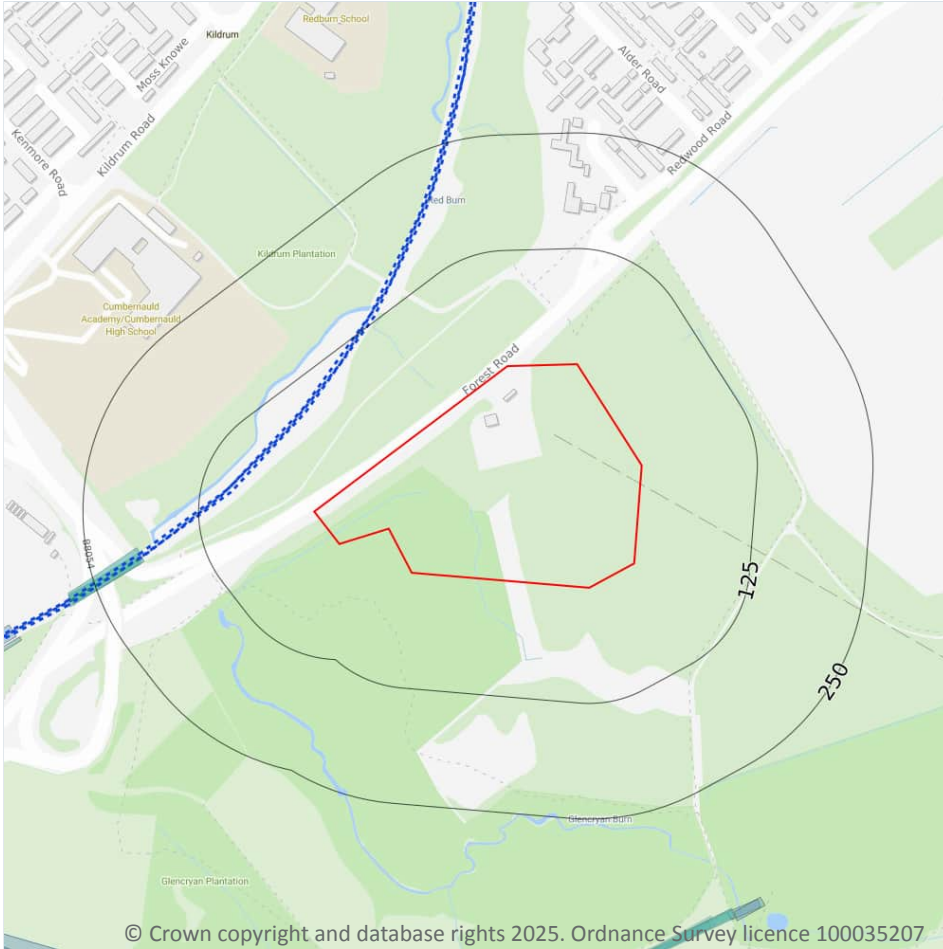
0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



22 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)
- C2 Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

22.1 Underground railways (London)

Records within 250m

0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m

0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.



This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m

1

Railway tunnels taken from contemporary Ordnance Survey mapping.

Features are displayed on the Railway infrastructure and projects map on [page 94 >](#)

Location	Type
195m W	Railway Tunnel

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m

5

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on [page 94 >](#)

Location	Land Use	Year of mapping	Mapping scale
192m W	Tunnel	1990	10000
192m W	Tunnel	1975	10000
194m W	Tunnel	1967	1250
195m W	Tunnel	1969	2500
196m W	Tunnel	1989	2500

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m

0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.



22.6 Historical railways

Records within 250m**0**

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m**6**

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on [page 94 >](#)

Location	Name	Type
80m NW	Scottish Central Main Line	rail
83m NW	Not given	Multi Track
85m NW	Scottish Central Main Line	rail
149m NW	Not given	Multi Track
194m W	Scottish Central Main Line	rail
195m W	Scottish Central Main Line	rail

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 2

Records within 500m**0**

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.9 HS2

Records within 500m**0**

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to



Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.



Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference> ↗.

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Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: County Series

Map date: 1859

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1859
 Revised 1859
 Edition N/A
 Copyright N/A
 Levelled N/A

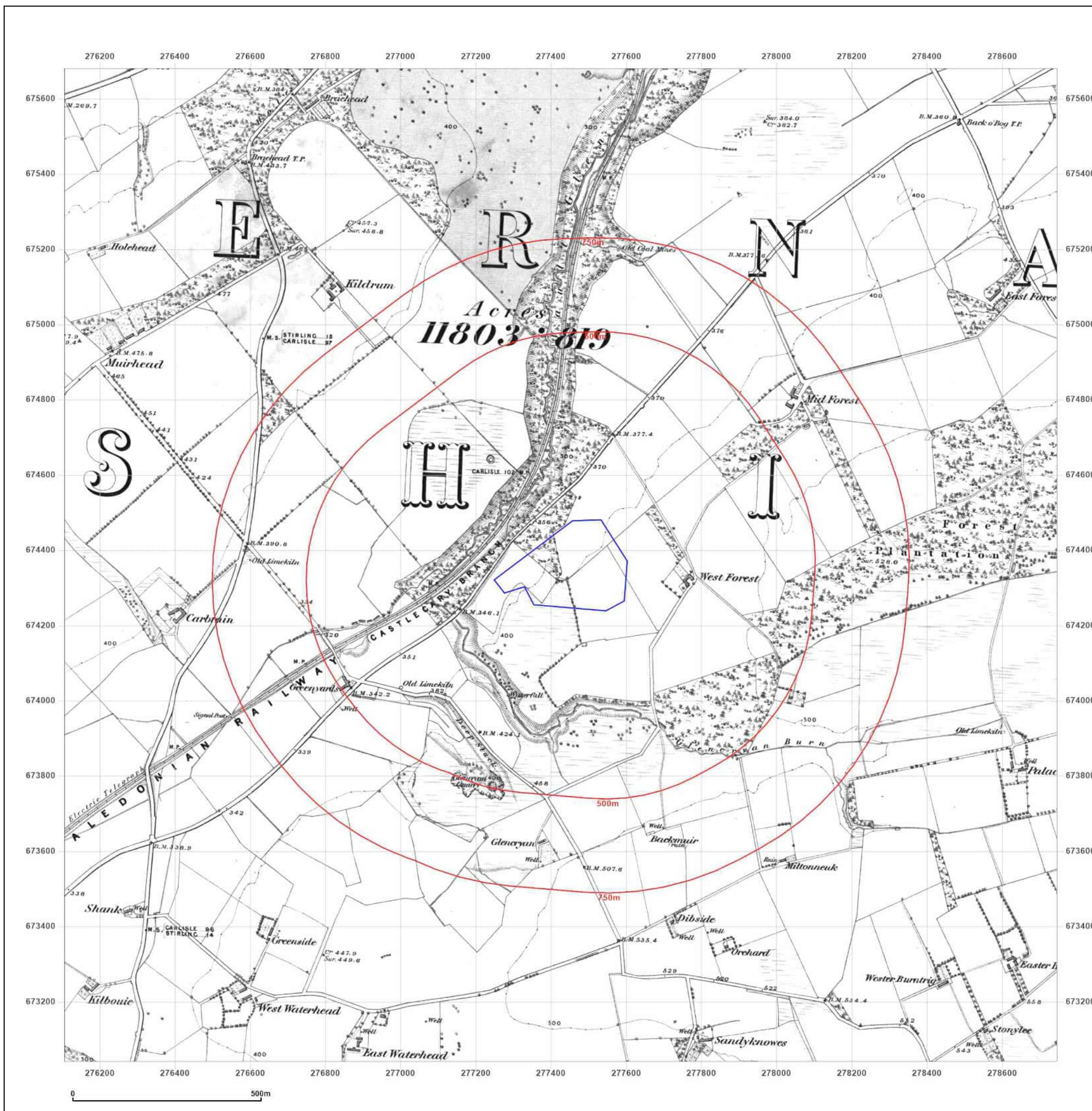


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Site Details:

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Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: County Series

Map date: 1896-1897

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1859
 Revised 1897
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1859
 Revised 1896
 Edition N/A
 Copyright N/A
 Levelled N/A

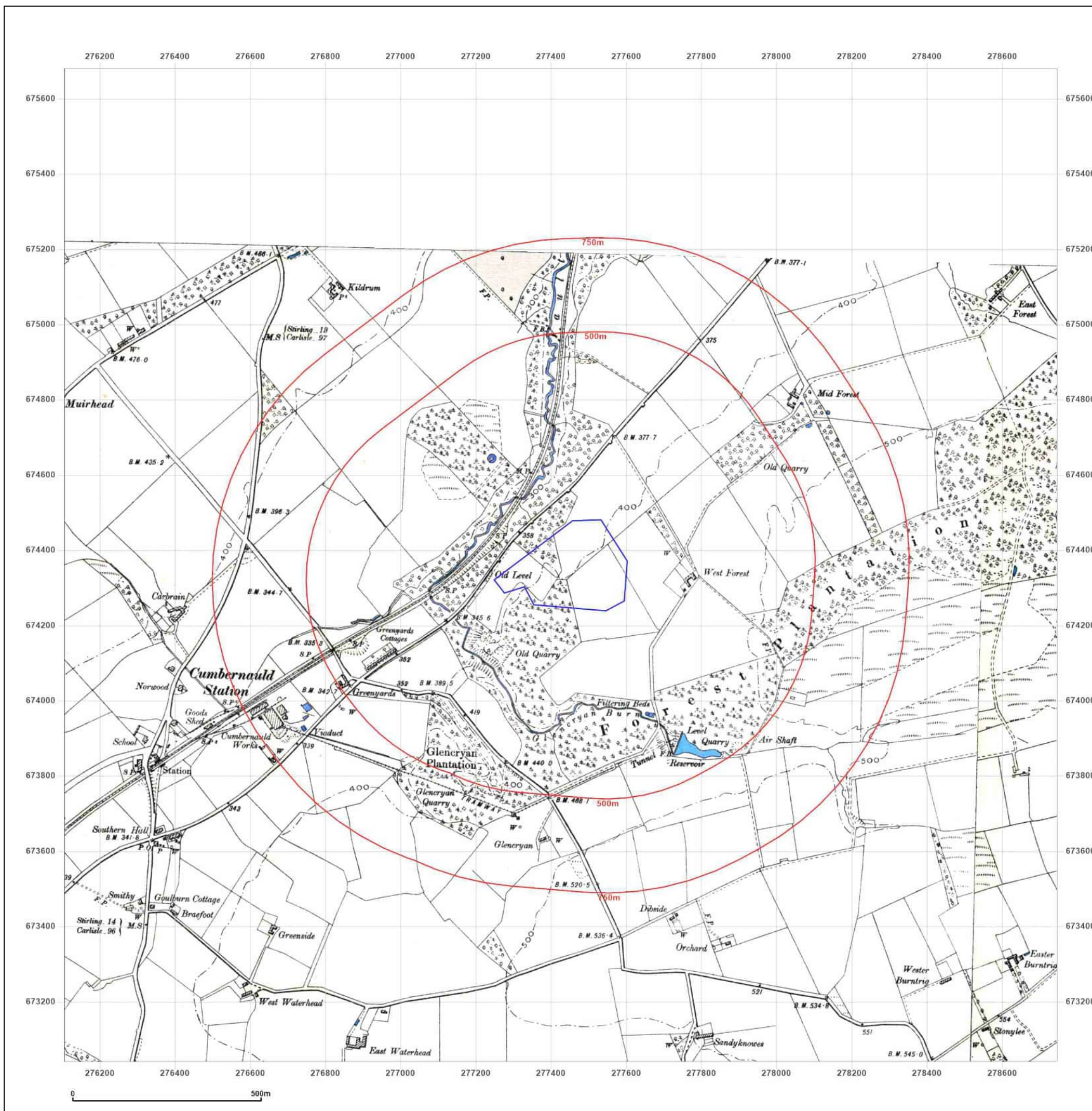


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Site Details:

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Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: County Series

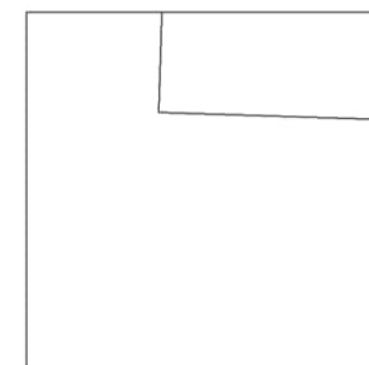
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Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1860
 Revised 1899
 Edition N/A
 Copyright N/A
 Levelled N/A

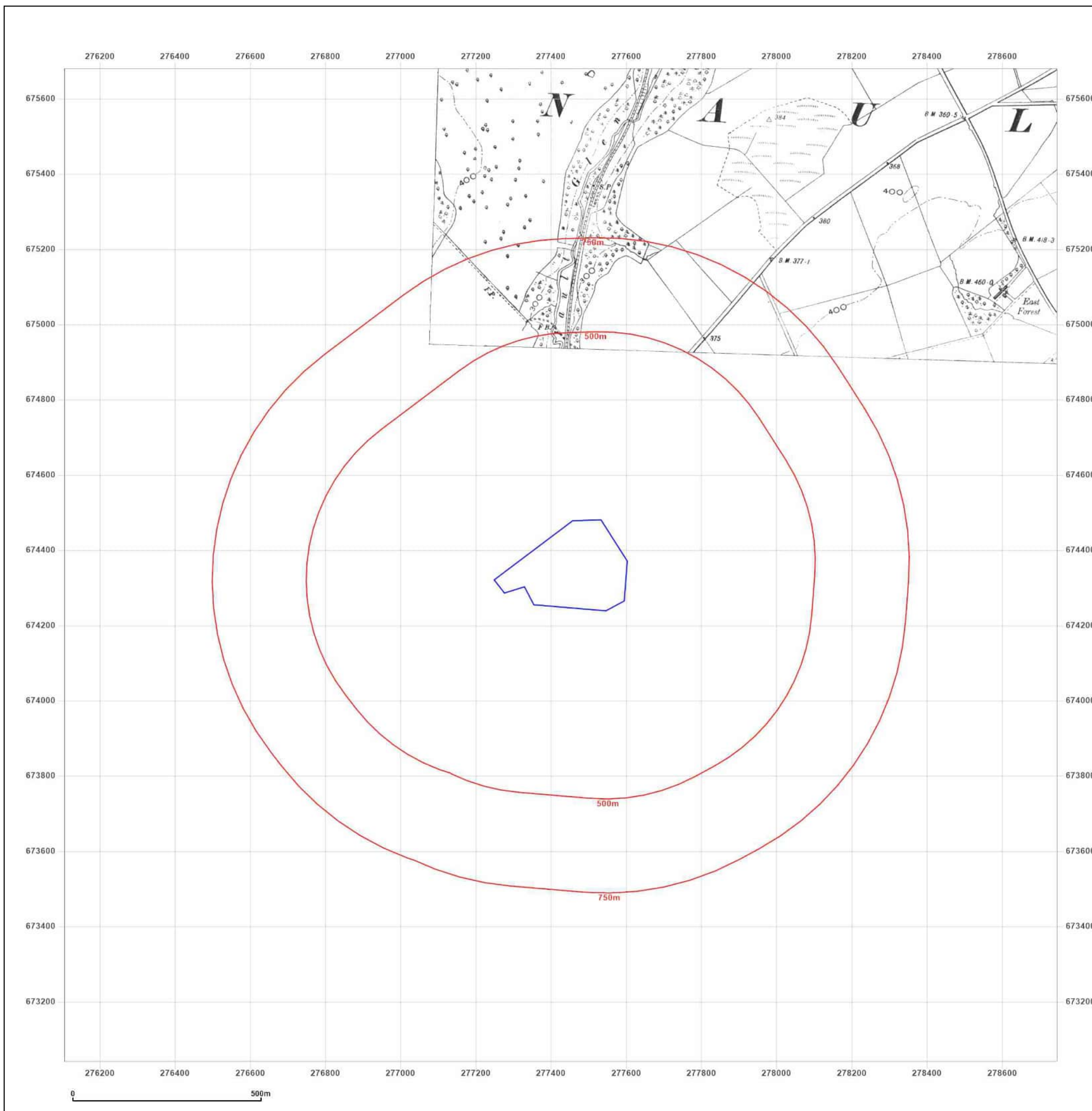


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Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: County Series

Map date: 1910-1914

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1860
Revised 1914
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1858
Revised 1914
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1858
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

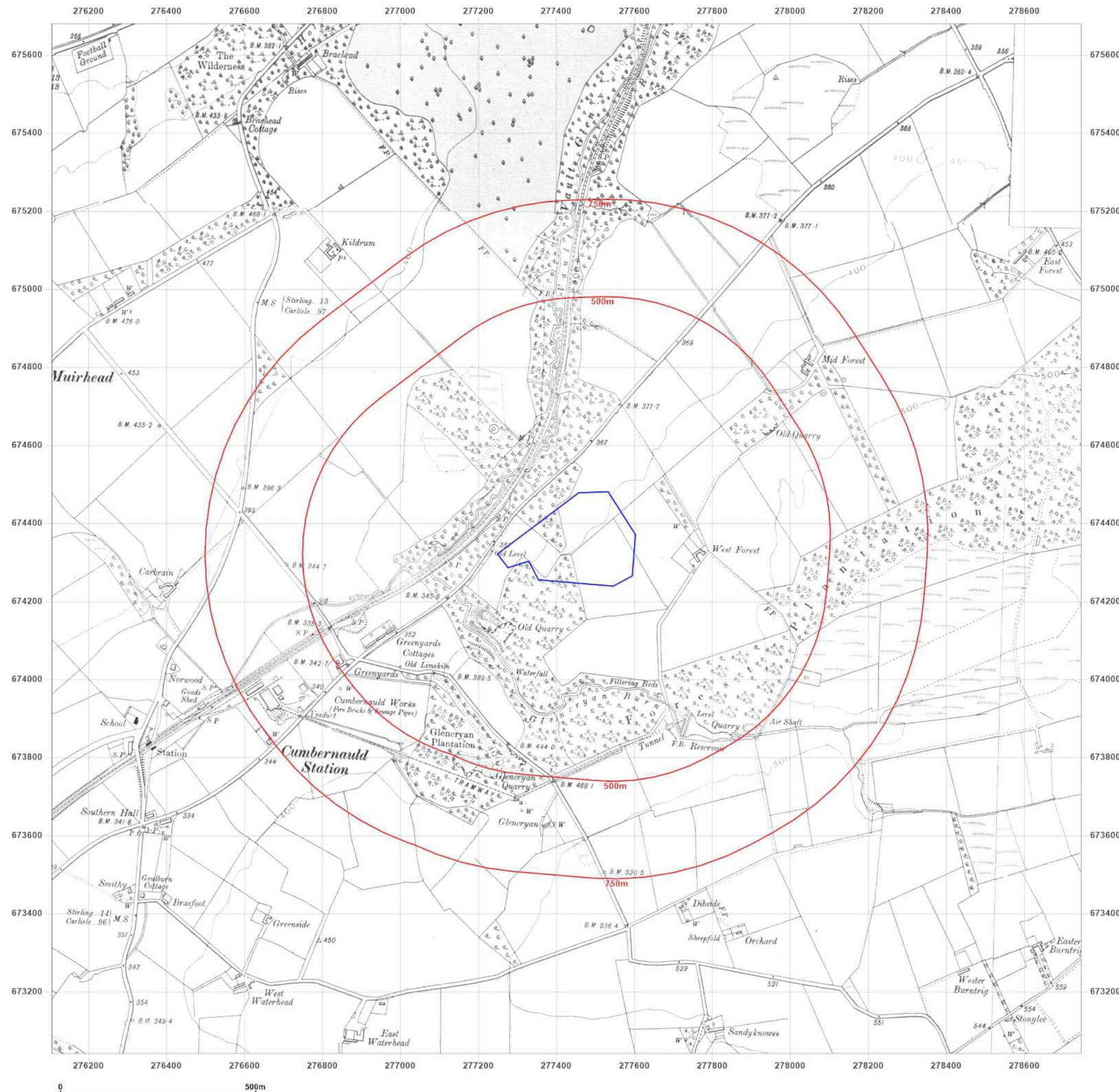


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Site Details:

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Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: County Series

Map date: 1922

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1860
 Revised 1914
 Edition 1922
 Copyright N/A
 Levelled N/A

Surveyed 1860
 Revised 1918
 Edition 1922
 Copyright N/A
 Levelled 1914

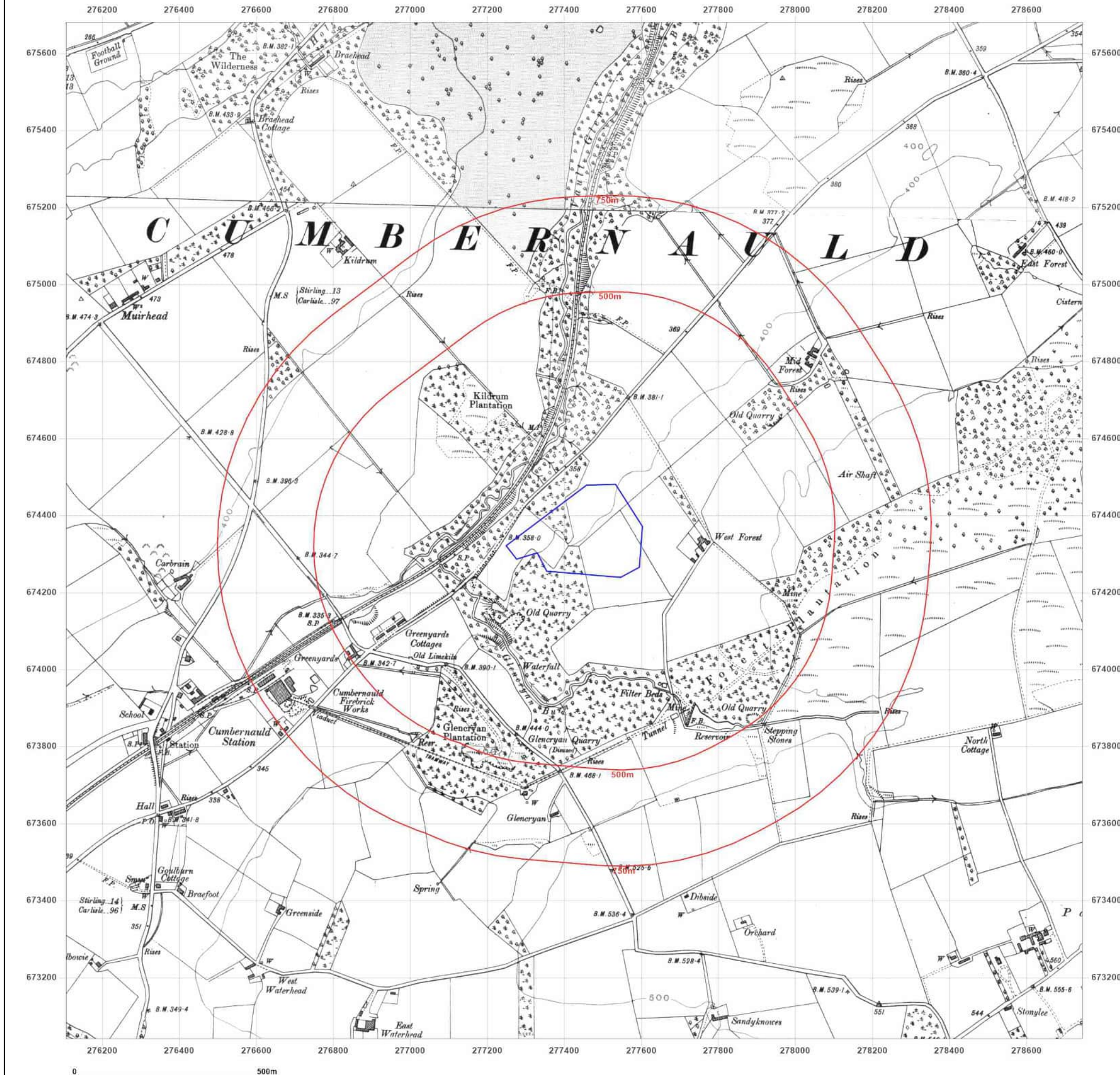


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Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: County Series

Map date: 1922

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1860
 Revised 1918
 Edition 1922
 Copyright N/A
 Levelled 1915

Surveyed 1860
 Revised 1922
 Edition N/A
 Copyright N/A
 Levelled N/A

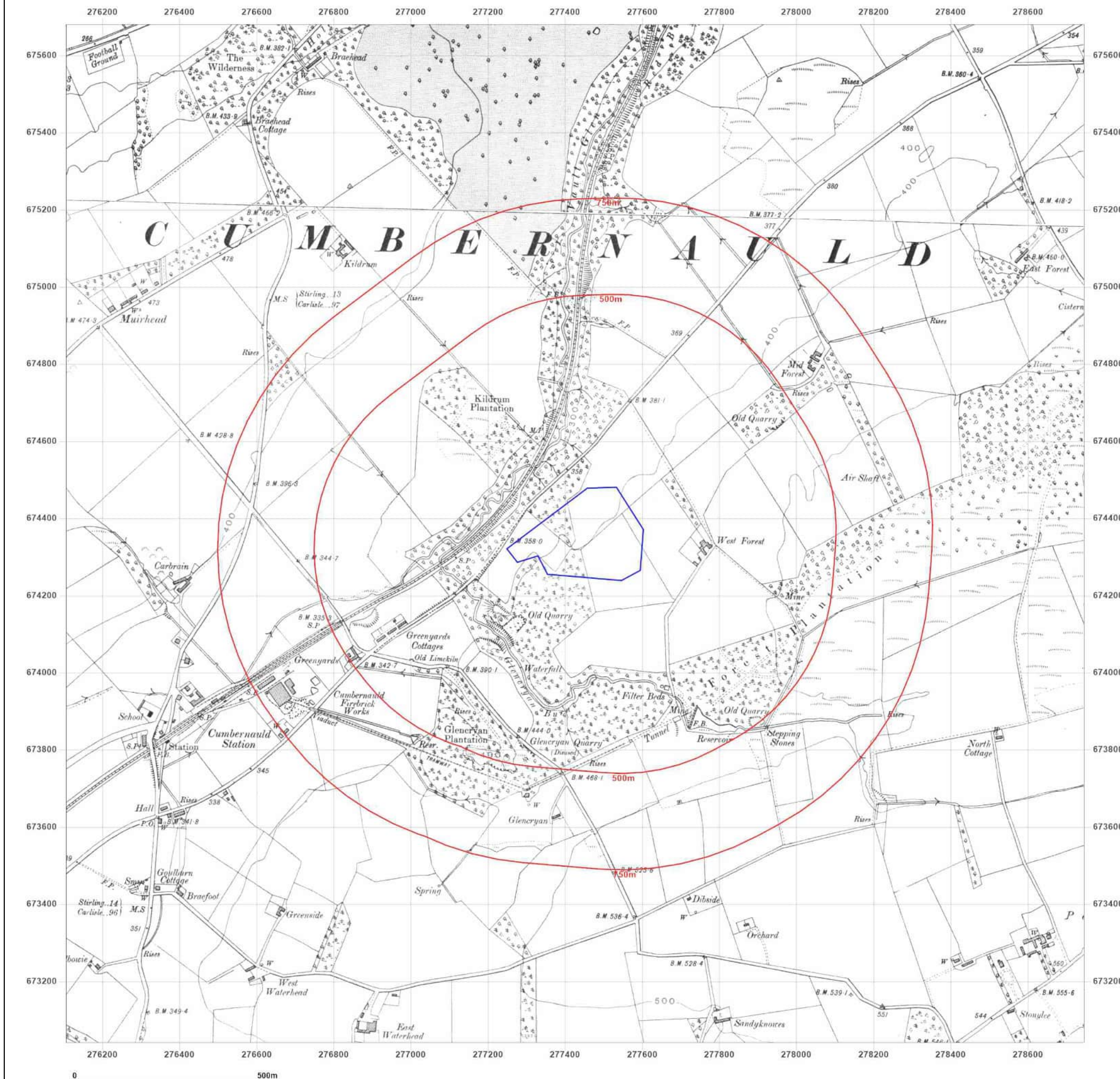


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Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: County Series

Map date: 1922

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1860
 Revised 1922
 Edition N/A
 Copyright N/A
 Levelled N/A

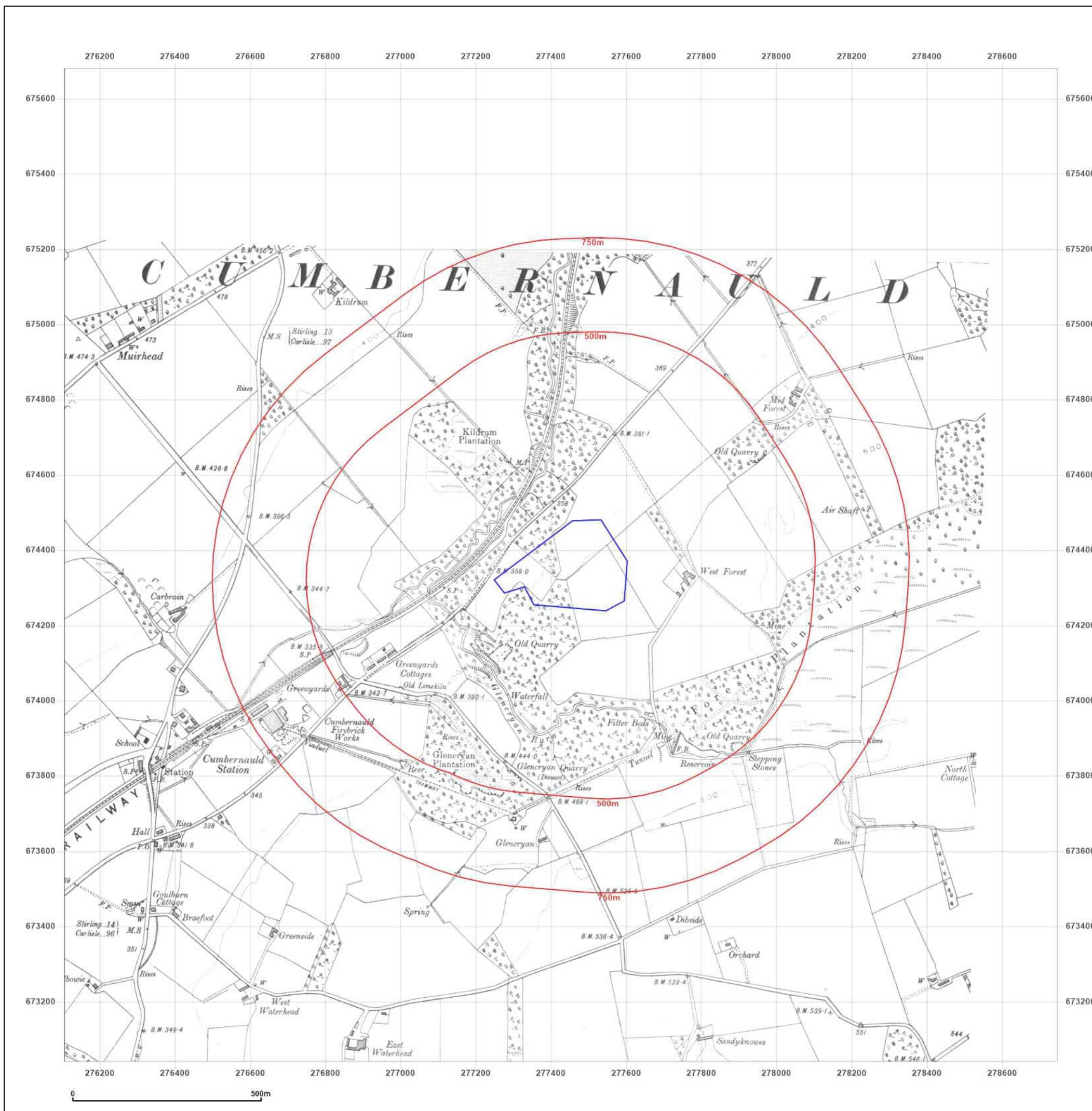


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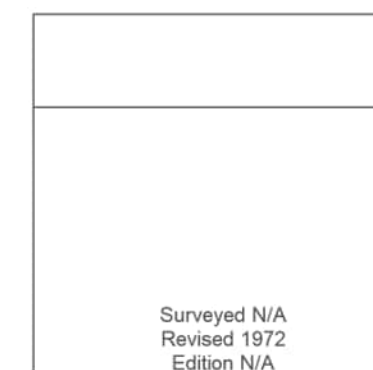
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Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: Provisional

Map date: 1972

Scale: 1:10,560

Printed at: 1:10,560

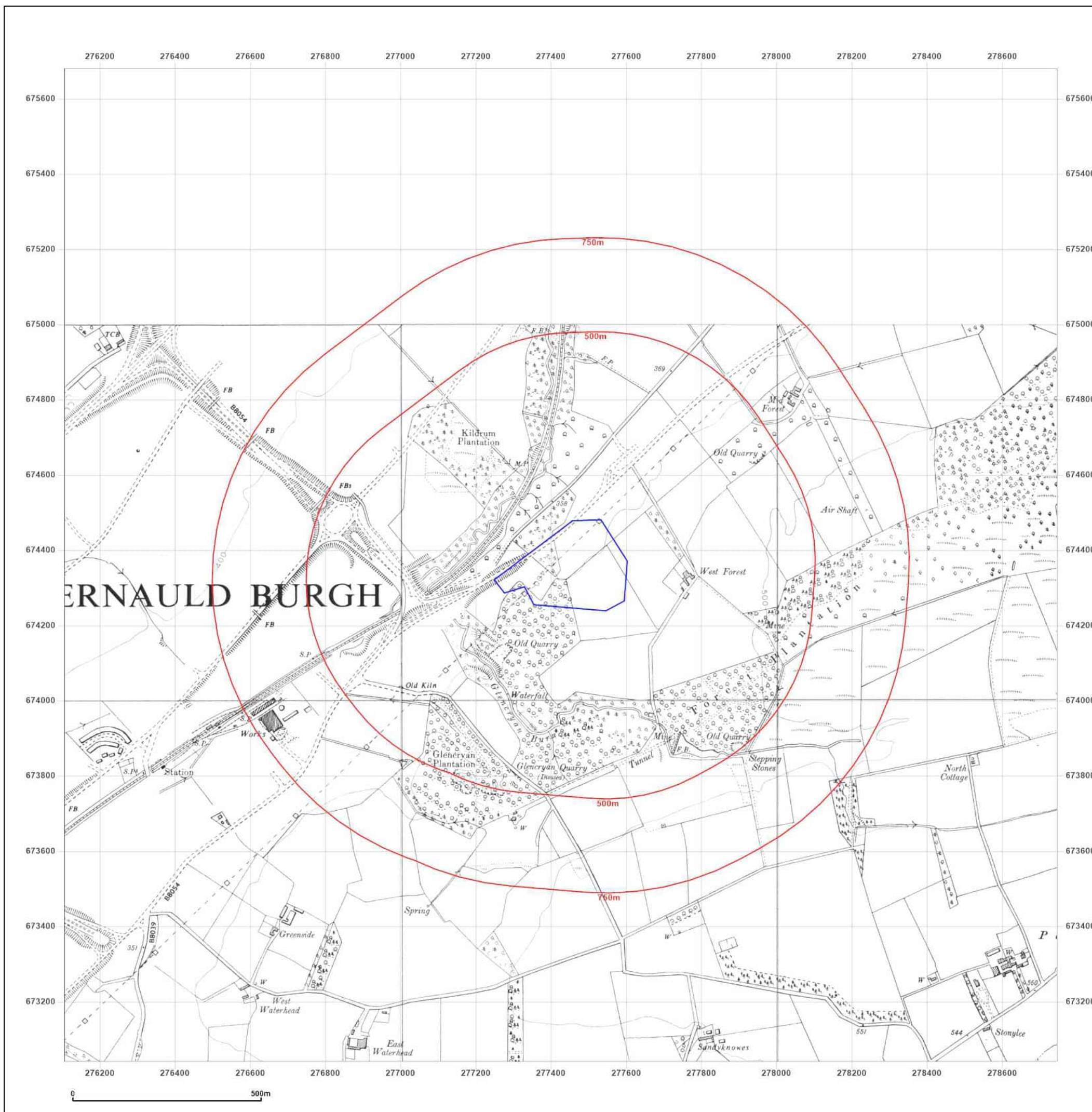


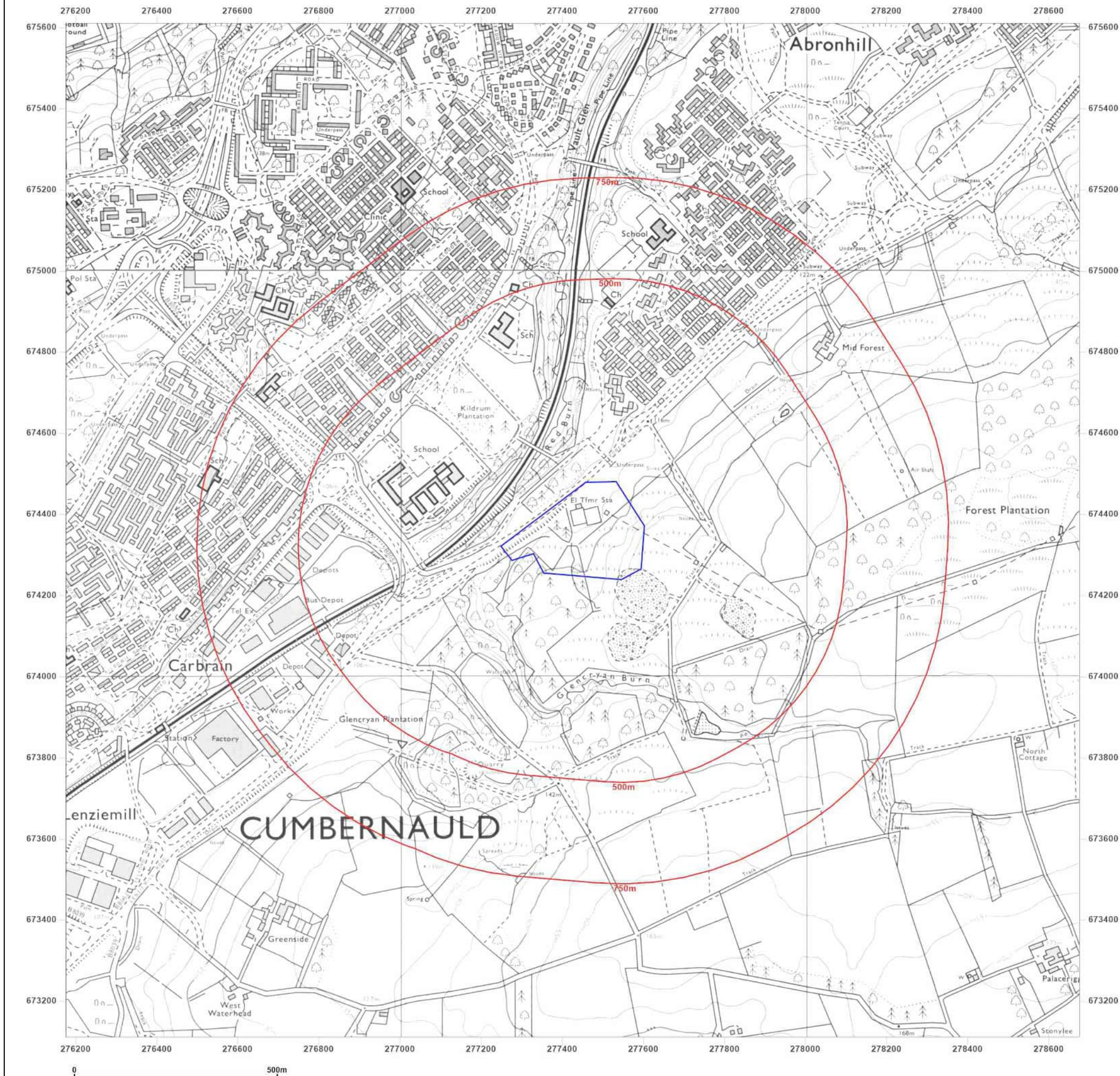
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Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: National Grid

Map date: 1974-1975

Scale: 1:10,000

Printed at: 1:10,000



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Levelled N/A

Surveyed 1974 Revised 1975 Edition N/A Copyright N/A Levelled N/A



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Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: National Grid

Map date: 1987-1990

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1985
Revised 1987
Edition N/A
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Levelled N/A

Surveyed 1988
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

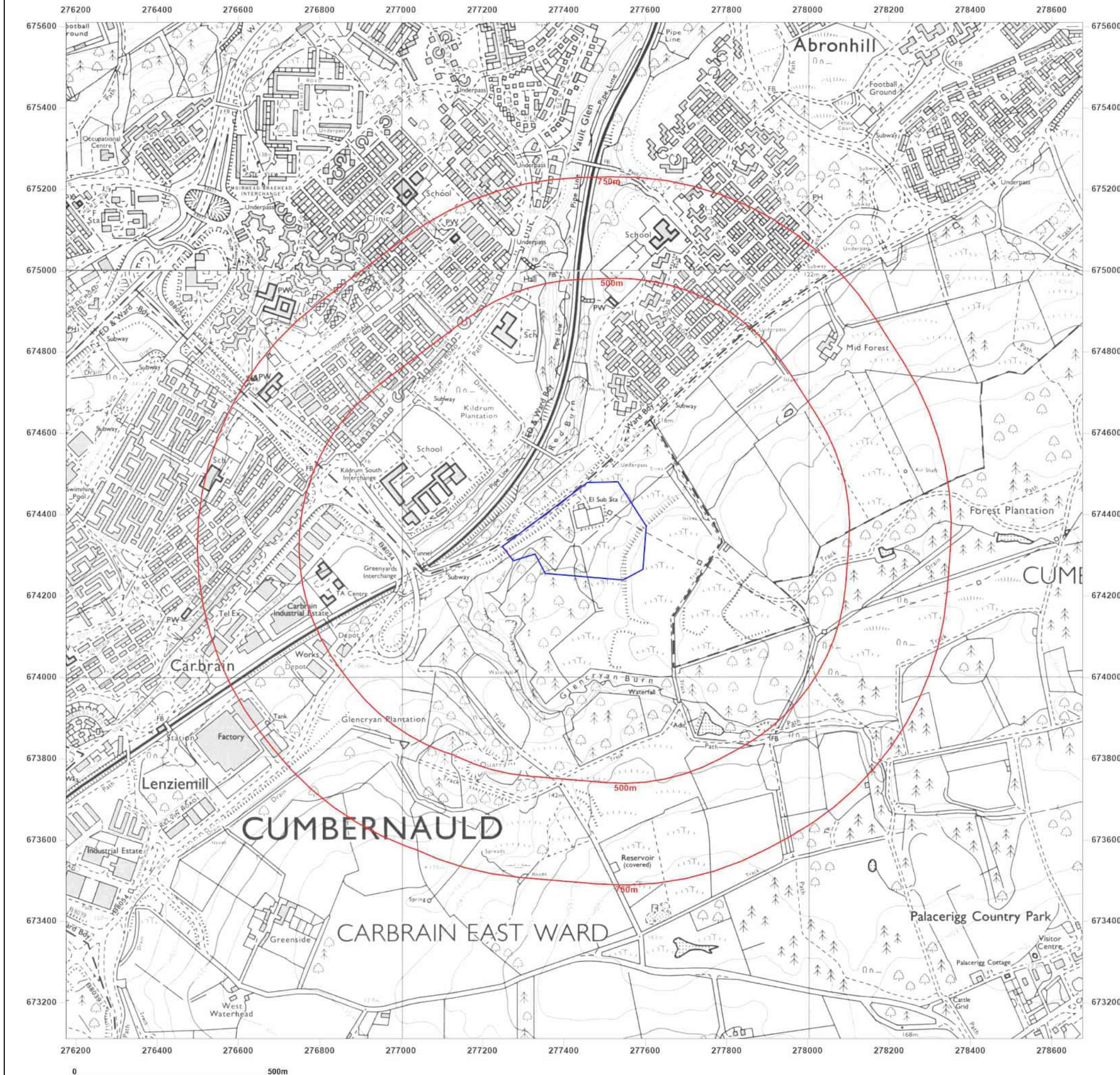


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Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



2001

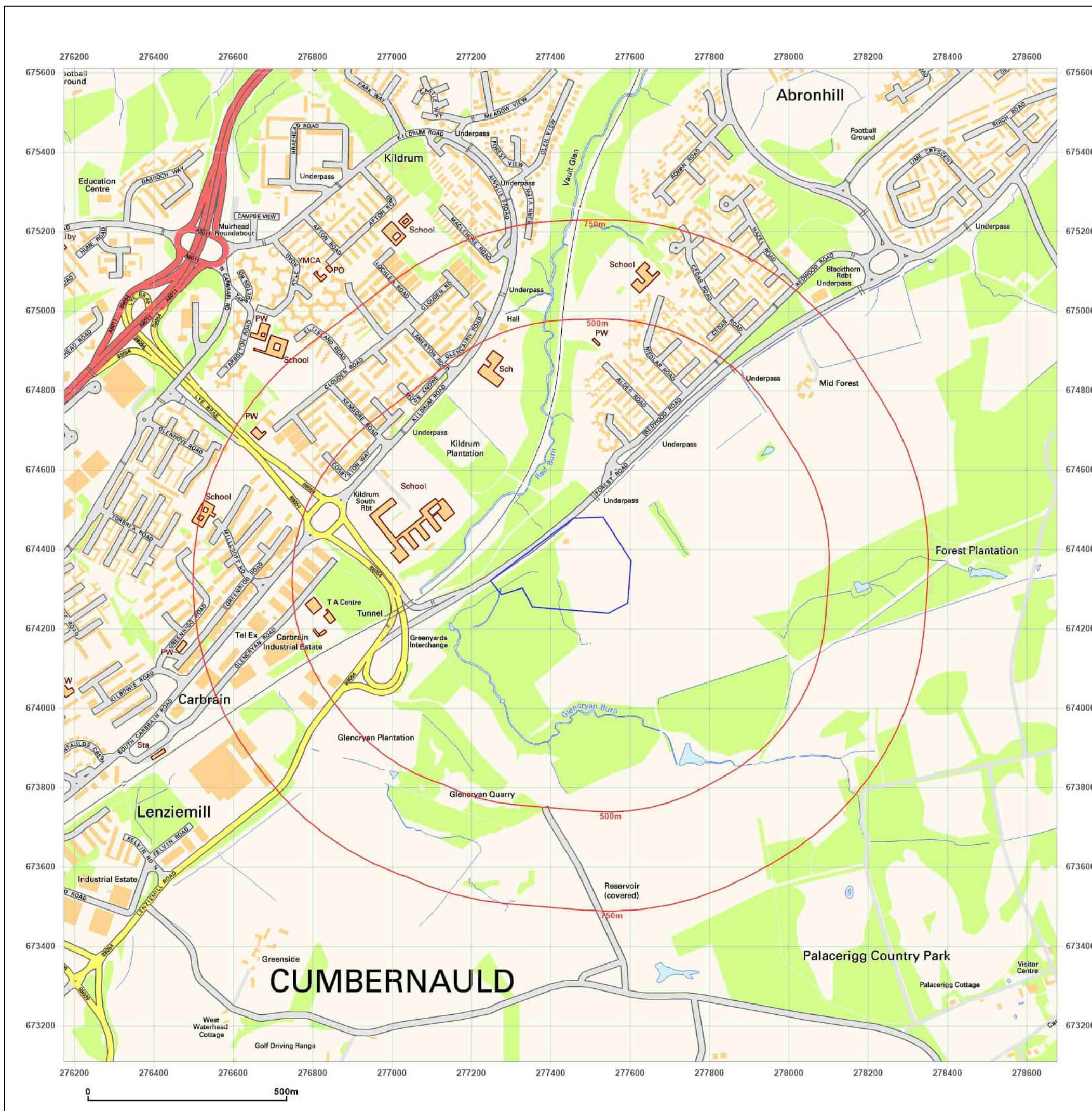


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Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010

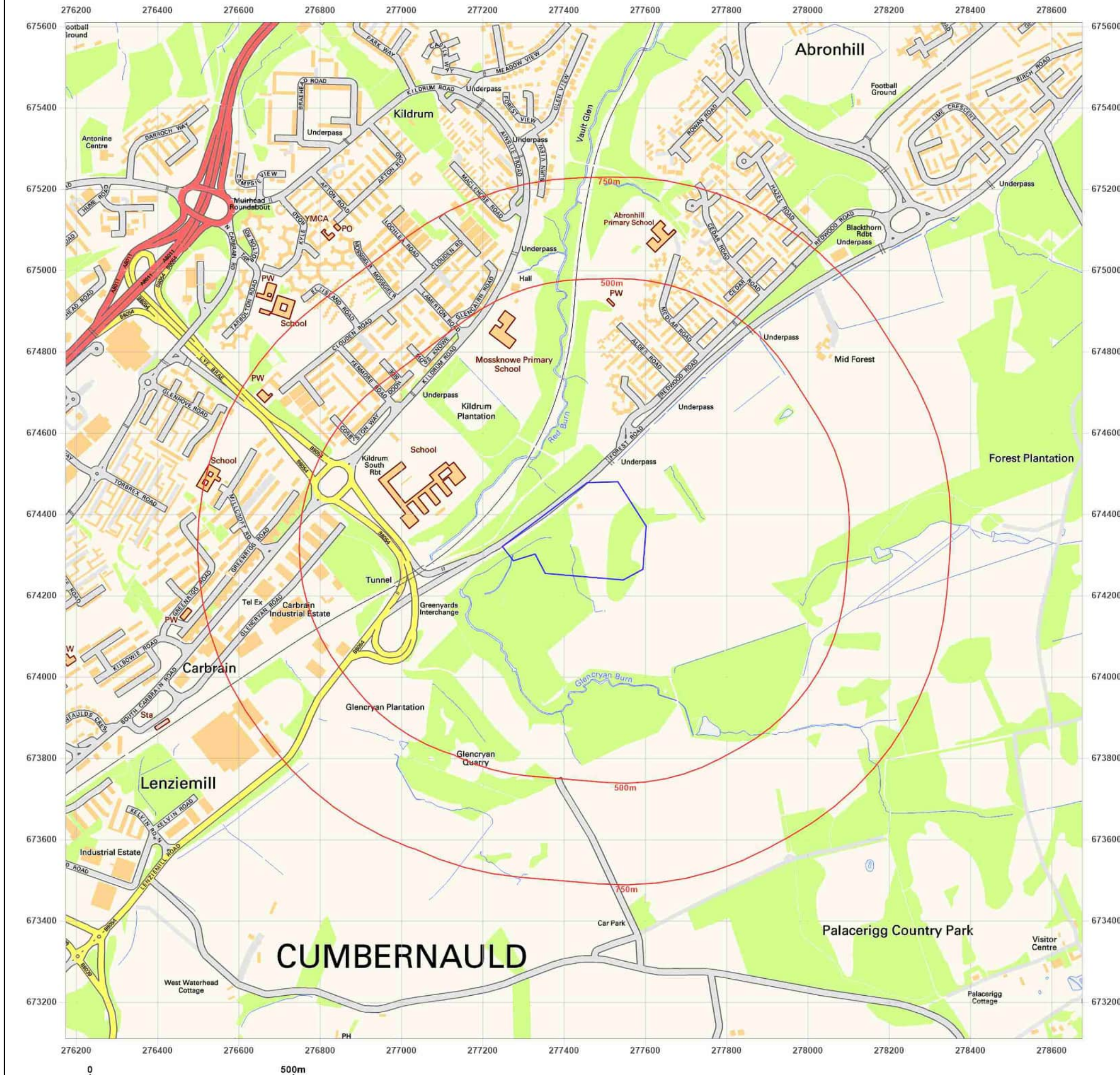


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Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C
Grid Ref: 277425, 674360

Map Name: National Grid

Map date: 2025

Scale: 1:10,000

Printed at: 1:10,000

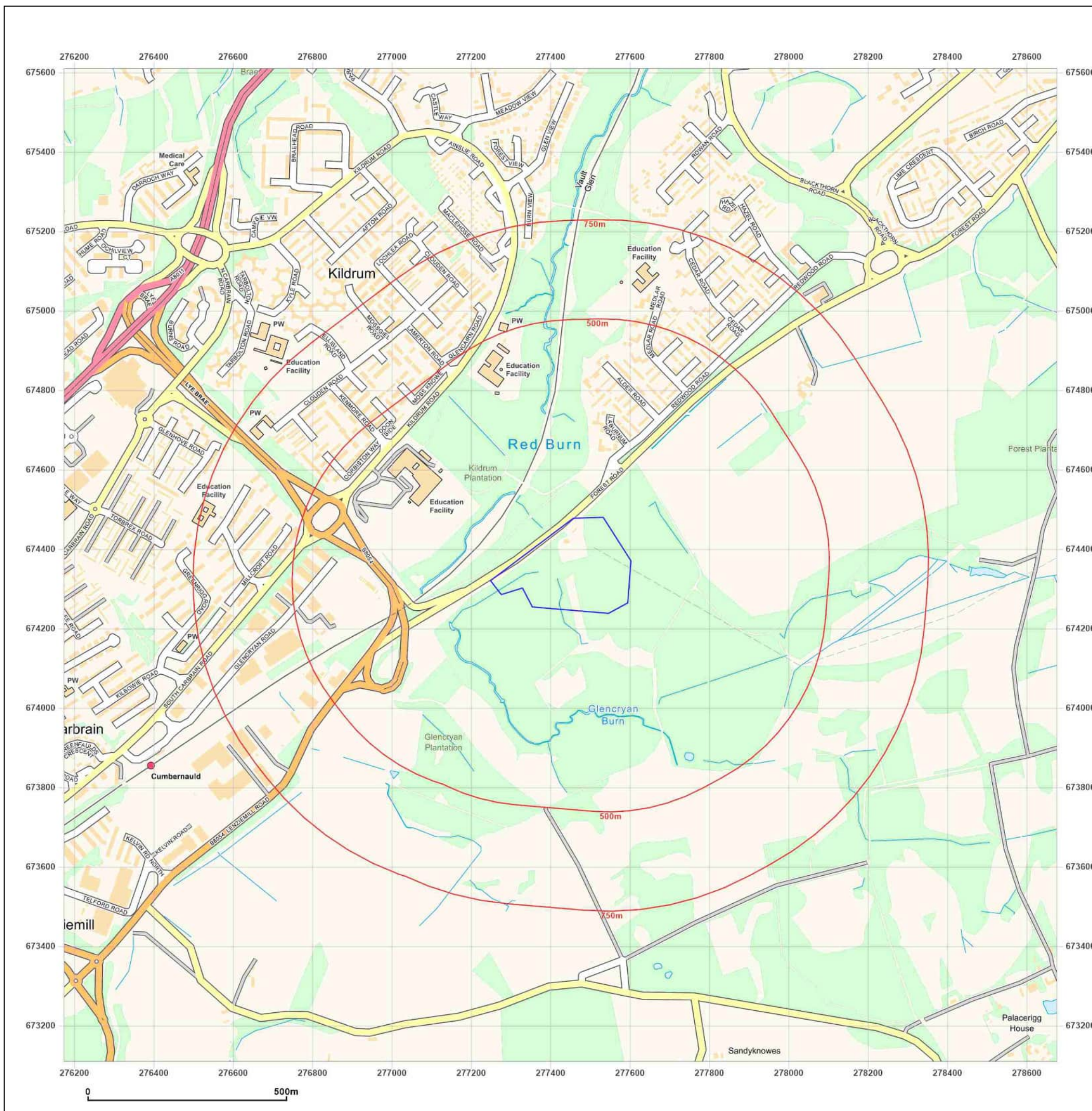


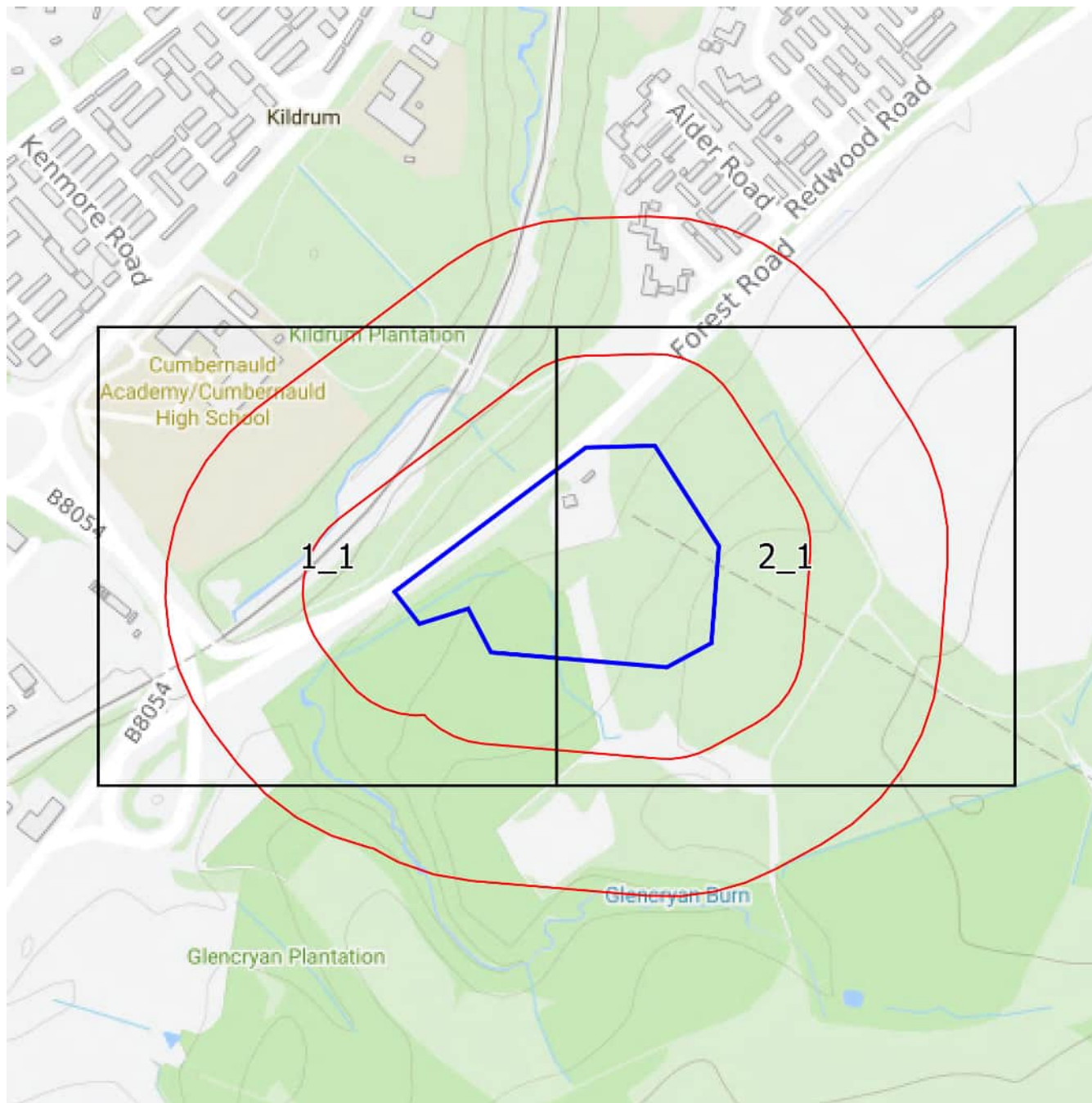
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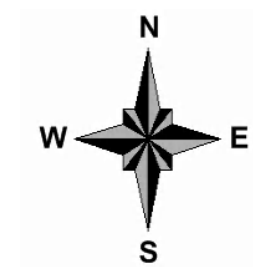
Production date: 26 September 2025

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf





1:1,250 Scale Grid Index



Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C_1250_1_1
Grid Ref: 277174, 674360

Map Name: National Grid

Map date: 1967

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1967
Revised 1967
Edition N/A
Copyright 1967
Levelled 1956

Surveyed 1967
Revised 1967
Edition N/A
Copyright 1967
Levelled 1964

Surveyed 1967
Revised 1967
Edition N/A
Copyright 1967
Levelled 1964

Surveyed 1967
Revised 1967
Edition N/A
Copyright 1967
Levelled 1964

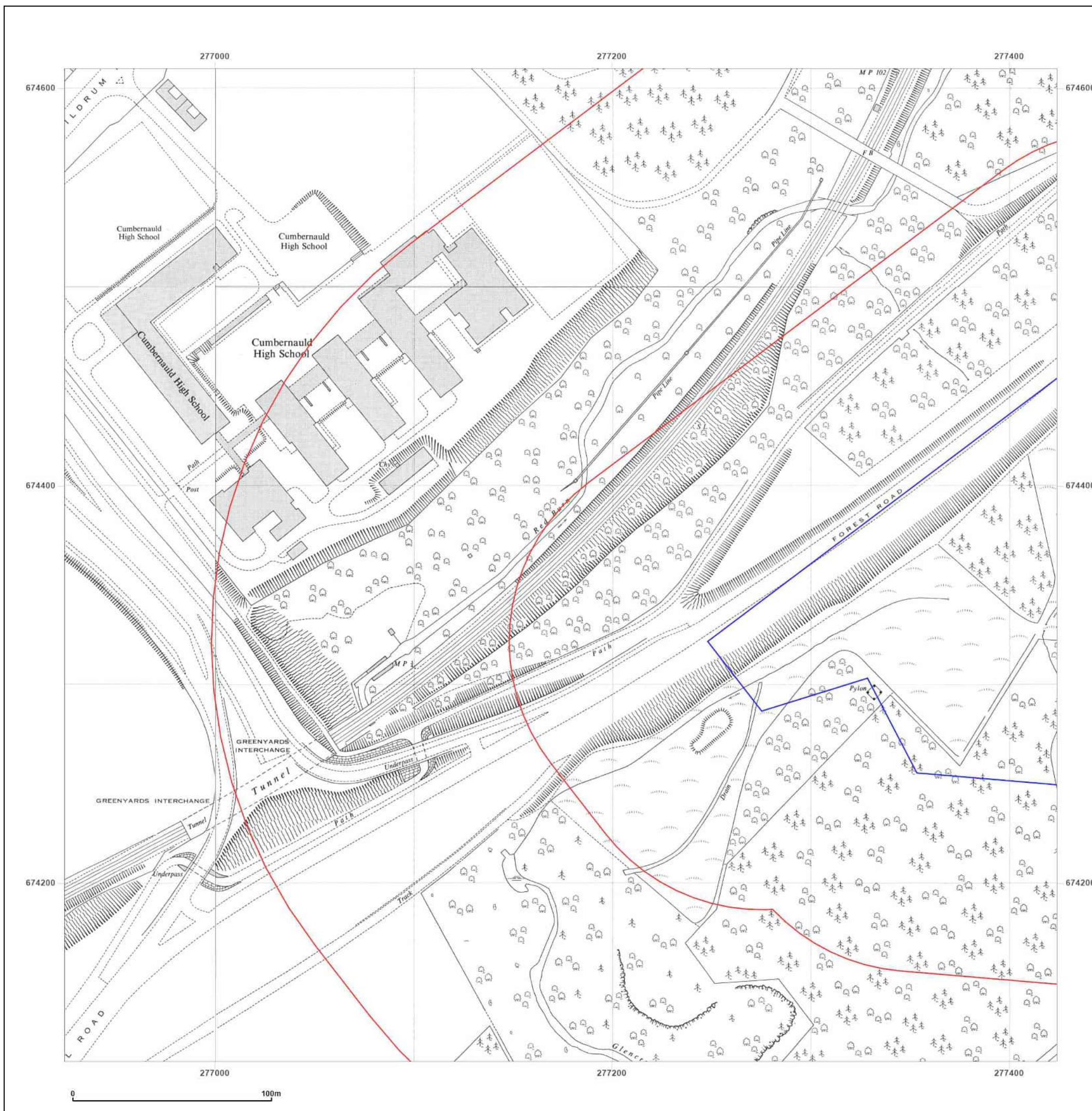


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Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C_1250_1_1
Grid Ref: 277174, 674360

Map Name: National Grid

Map date: 1975

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed N/A
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 Edition N/A
 Copyright N/A
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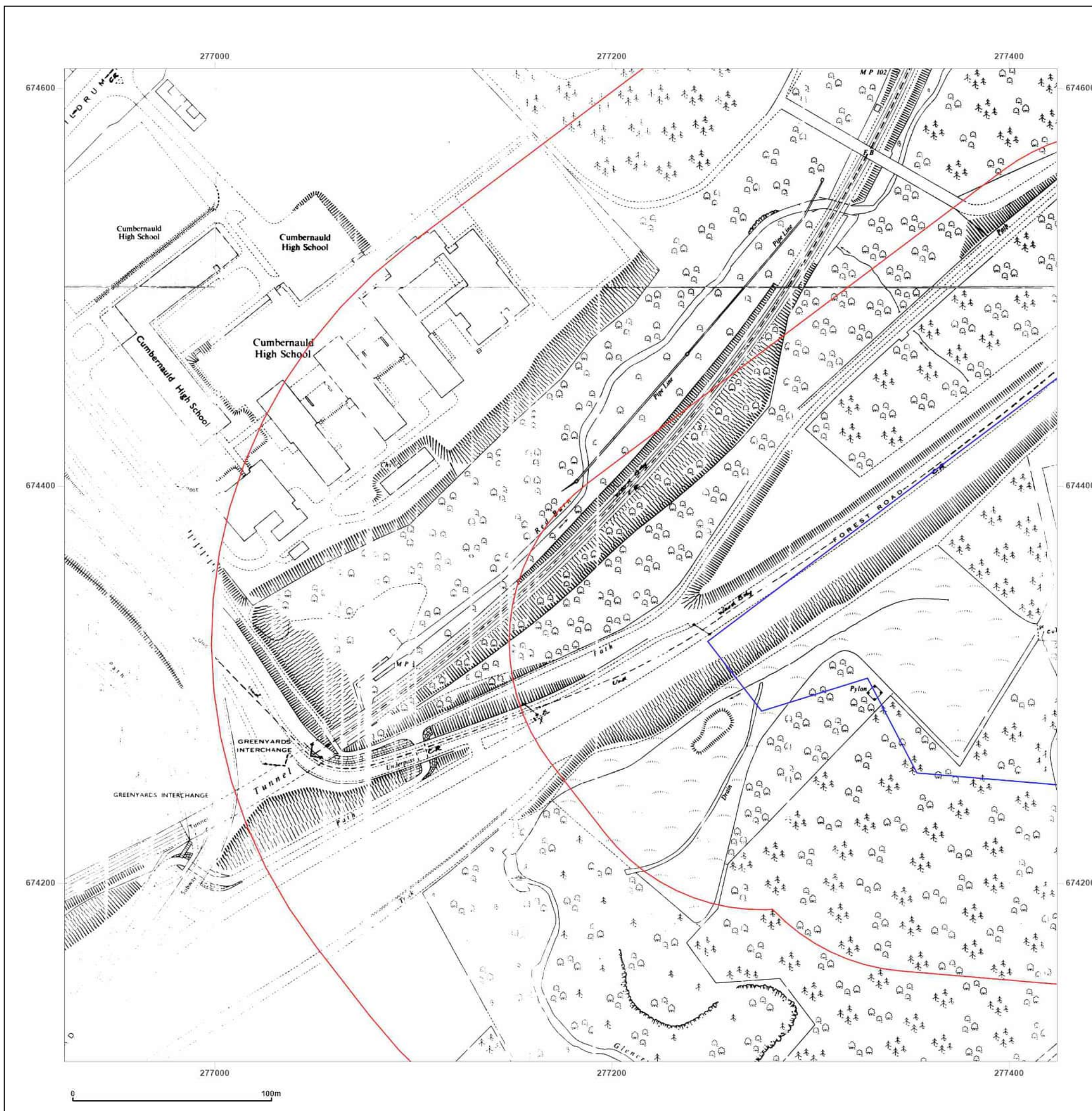


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Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C_1250_1_1
Grid Ref: 277174, 674360

Map Name: National Grid

Map date: 1989-1994

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1978
 Revised 1989
 Edition N/A
 Copyright 1989
 Levelled 1978

Surveyed 1994
 Revised 1994
 Edition N/A
 Copyright 1994
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1992
 Levelled N/A

Surveyed N/A
 Revised N/A
 Edition N/A
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Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C_1250_2_1
Grid Ref: 277674, 674360

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

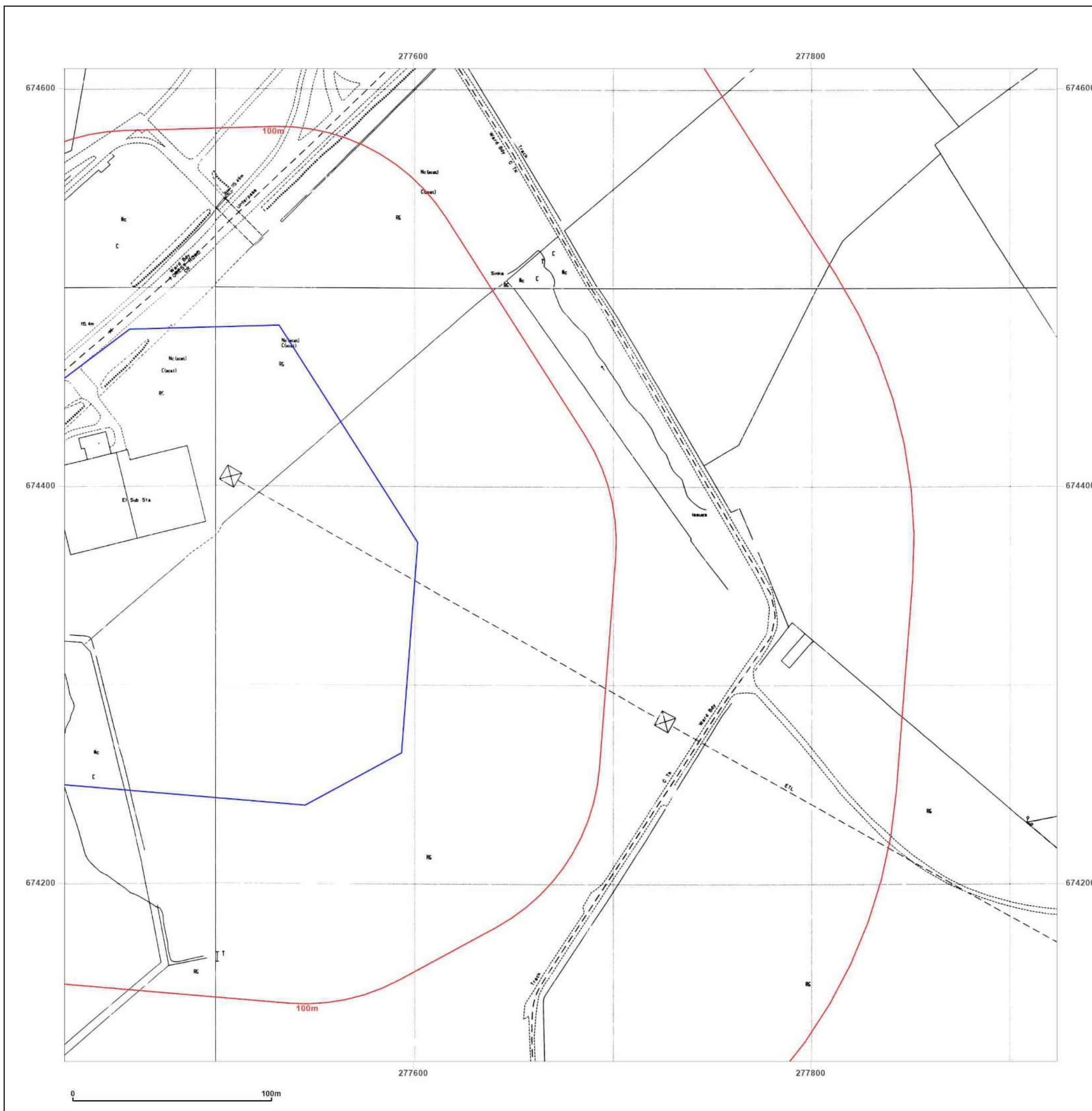


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Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C_2500
Grid Ref: 277424, 674360

Map Name: County Series

Map date: 1861

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1861
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

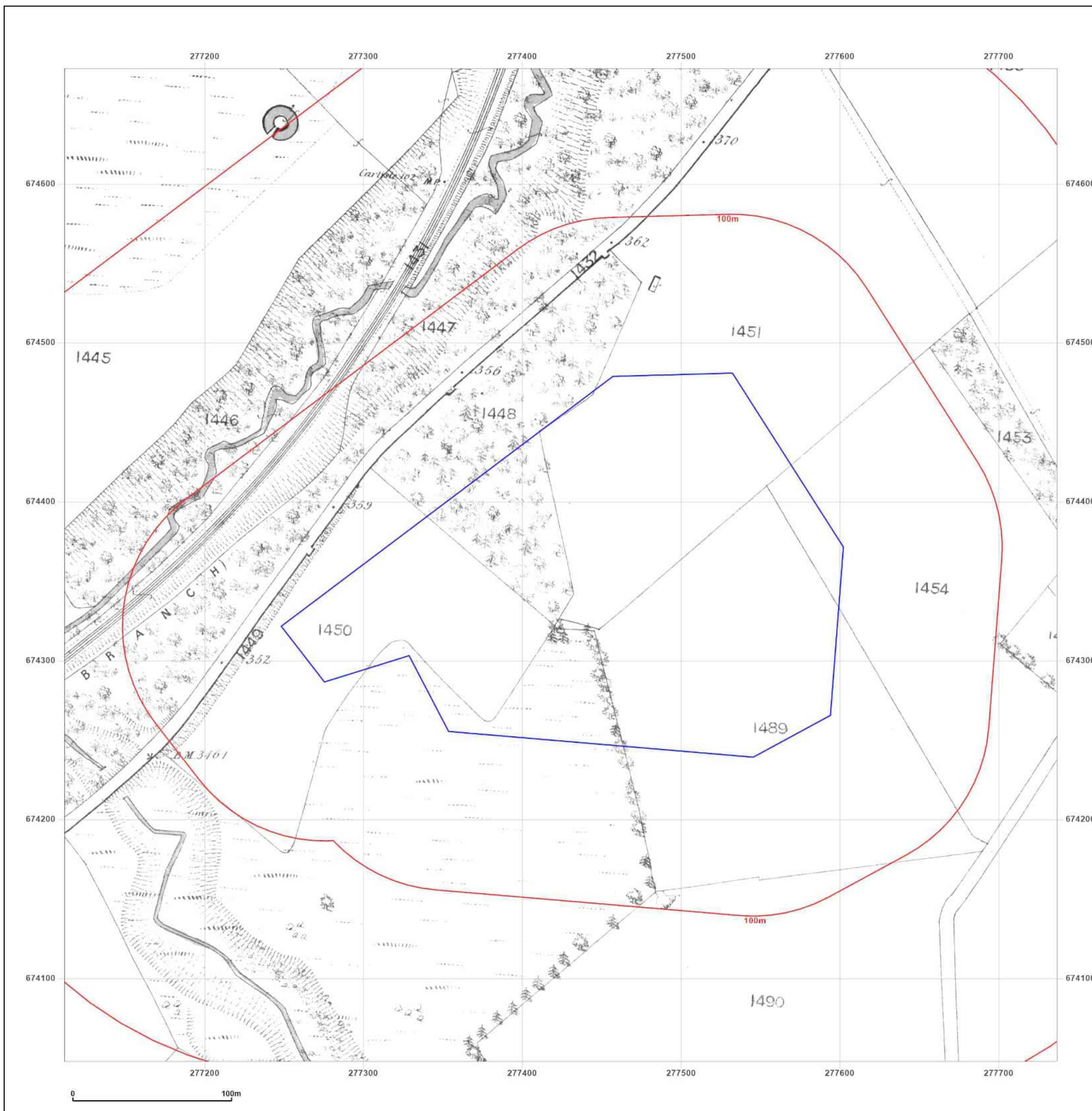


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Site Details:

Cumbernauld Substation

Client Ref: 60602788 - Cumbernauld Substation
Report Ref: GS-P44-OTG-VVY-E1C_2500
Grid Ref: 277424, 674360

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1898
 Revised 1898
 Edition N/A
 Copyright N/A
 Levelled N/A

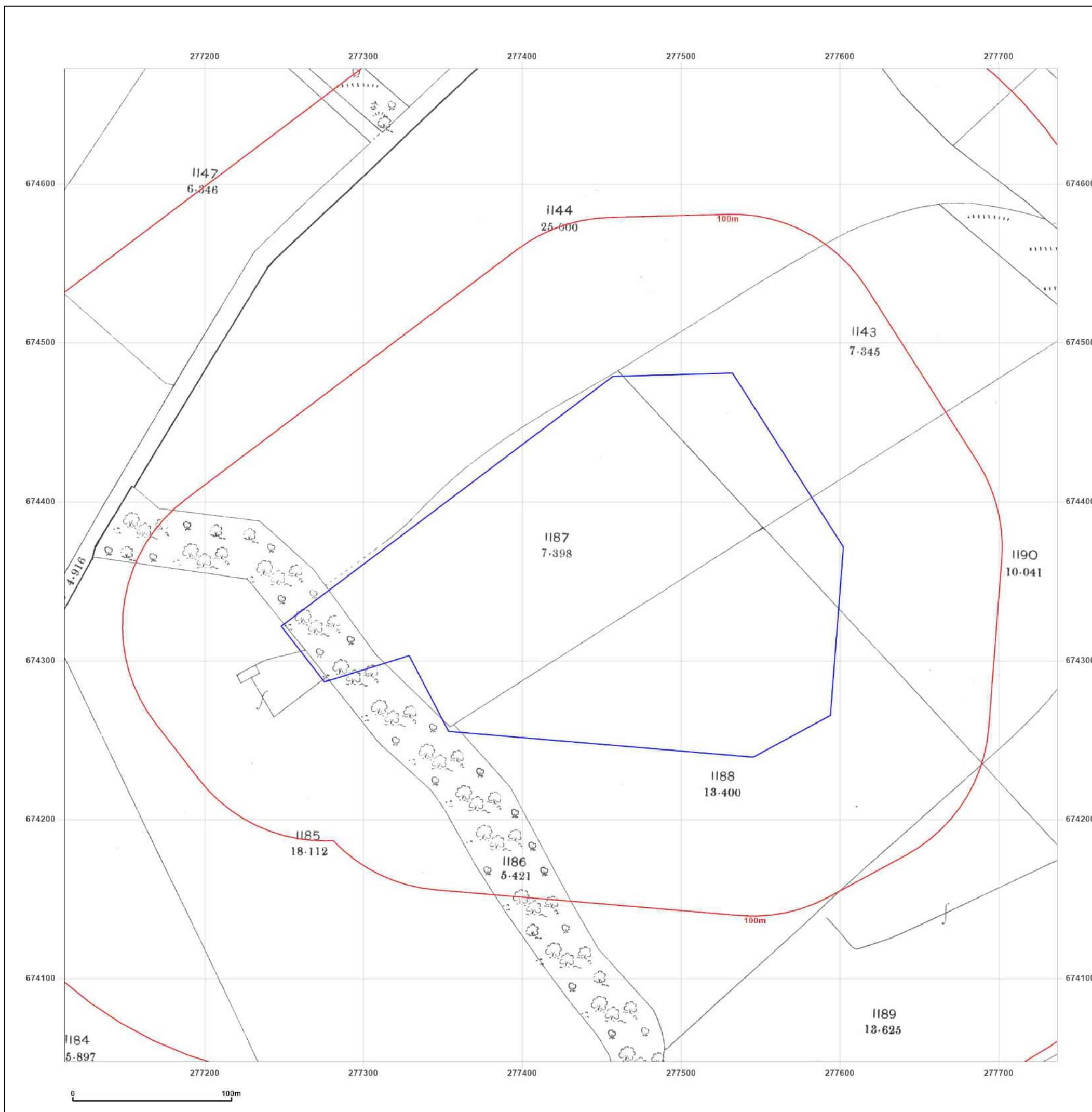


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Grid Ref: 277424, 674360

Map Name: County Series

Map date: 1898

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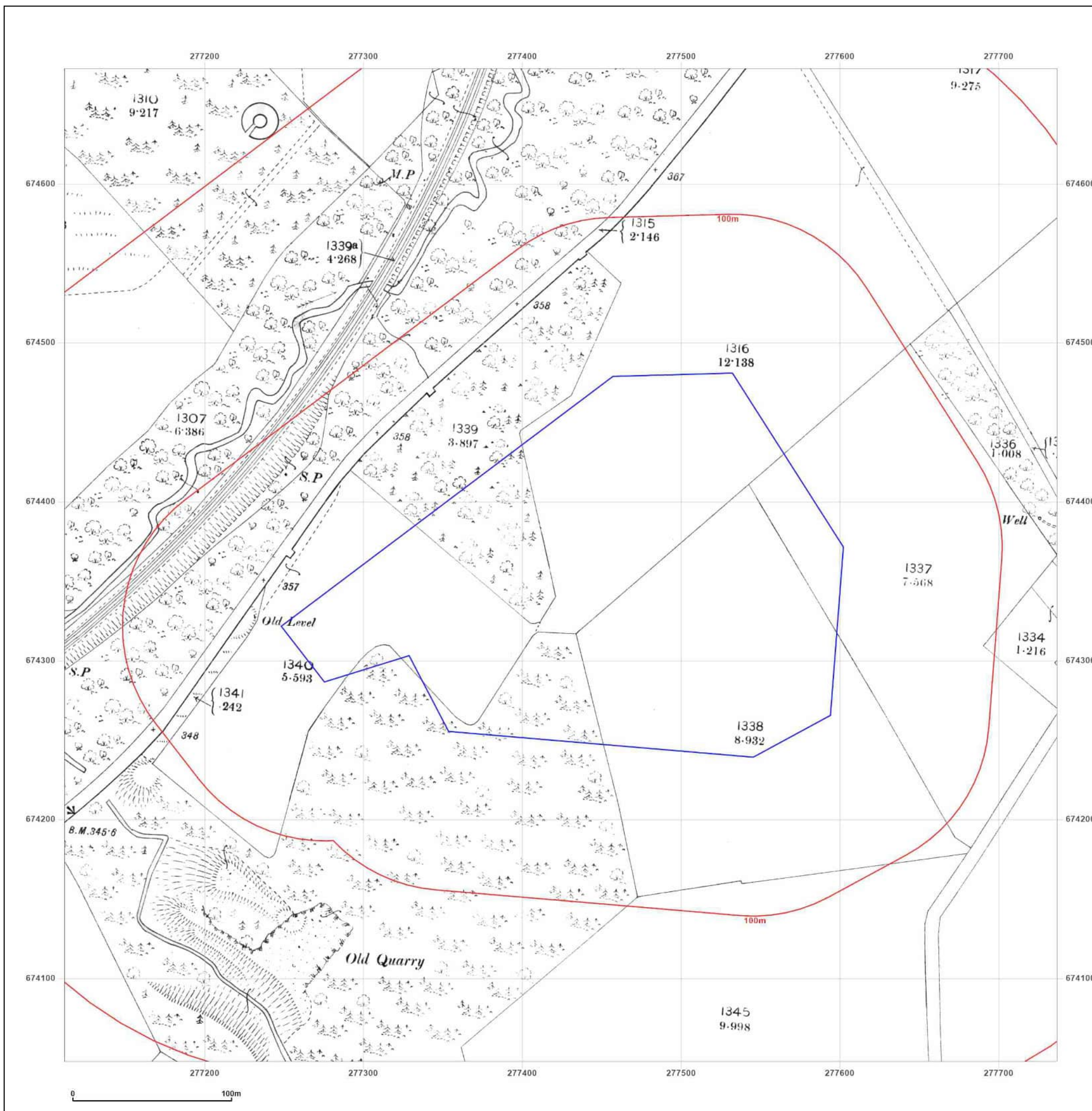


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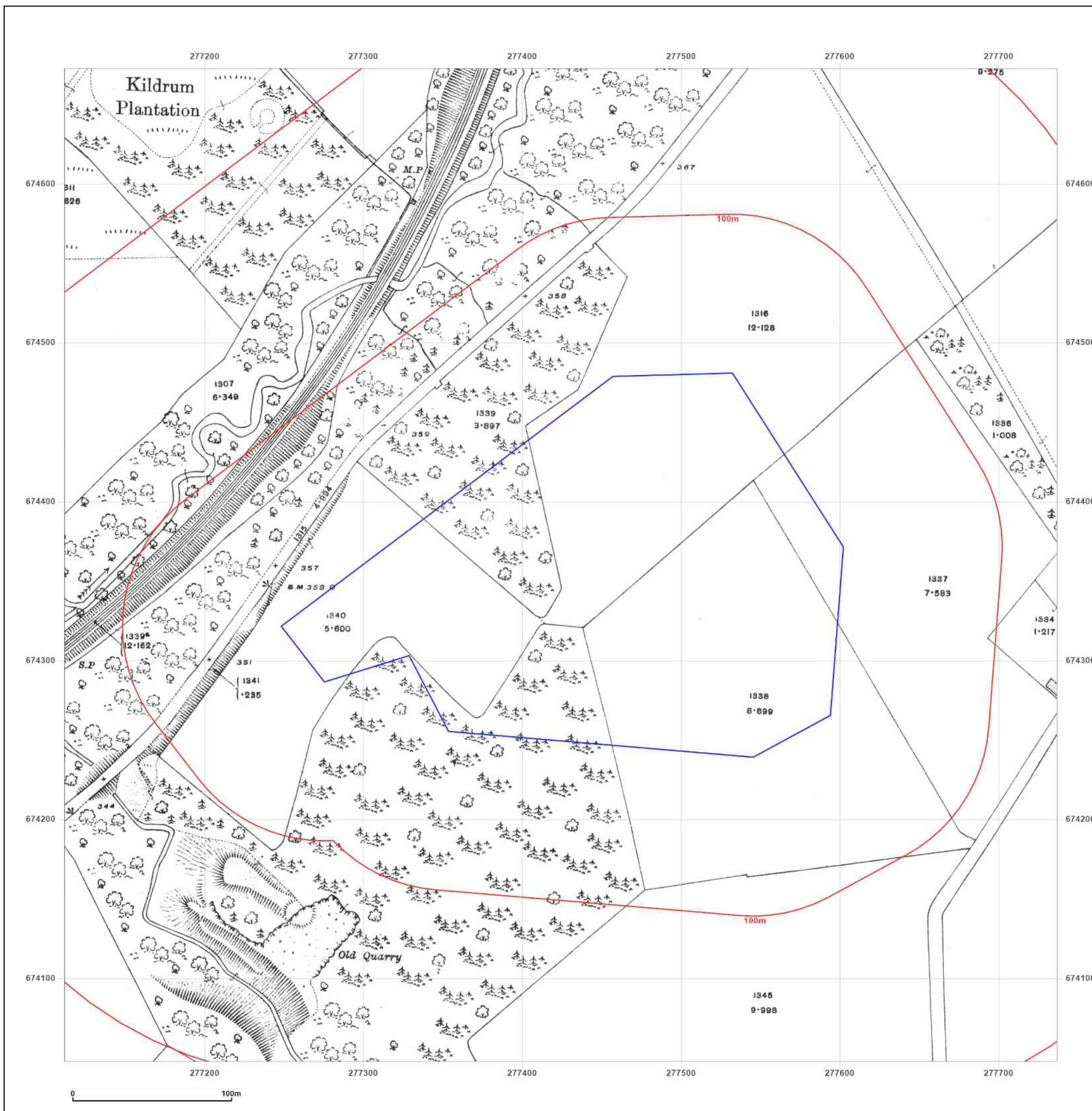


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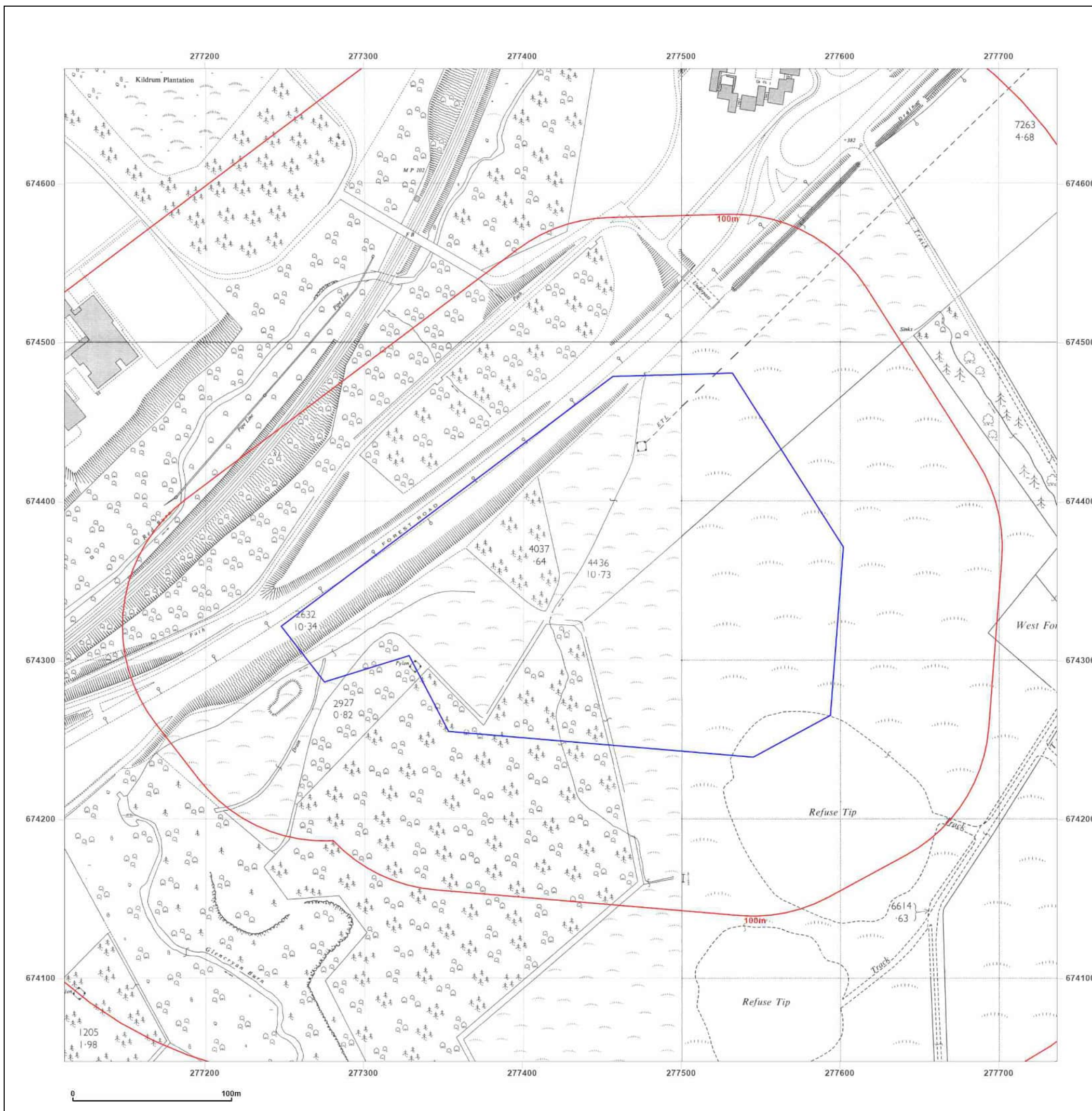


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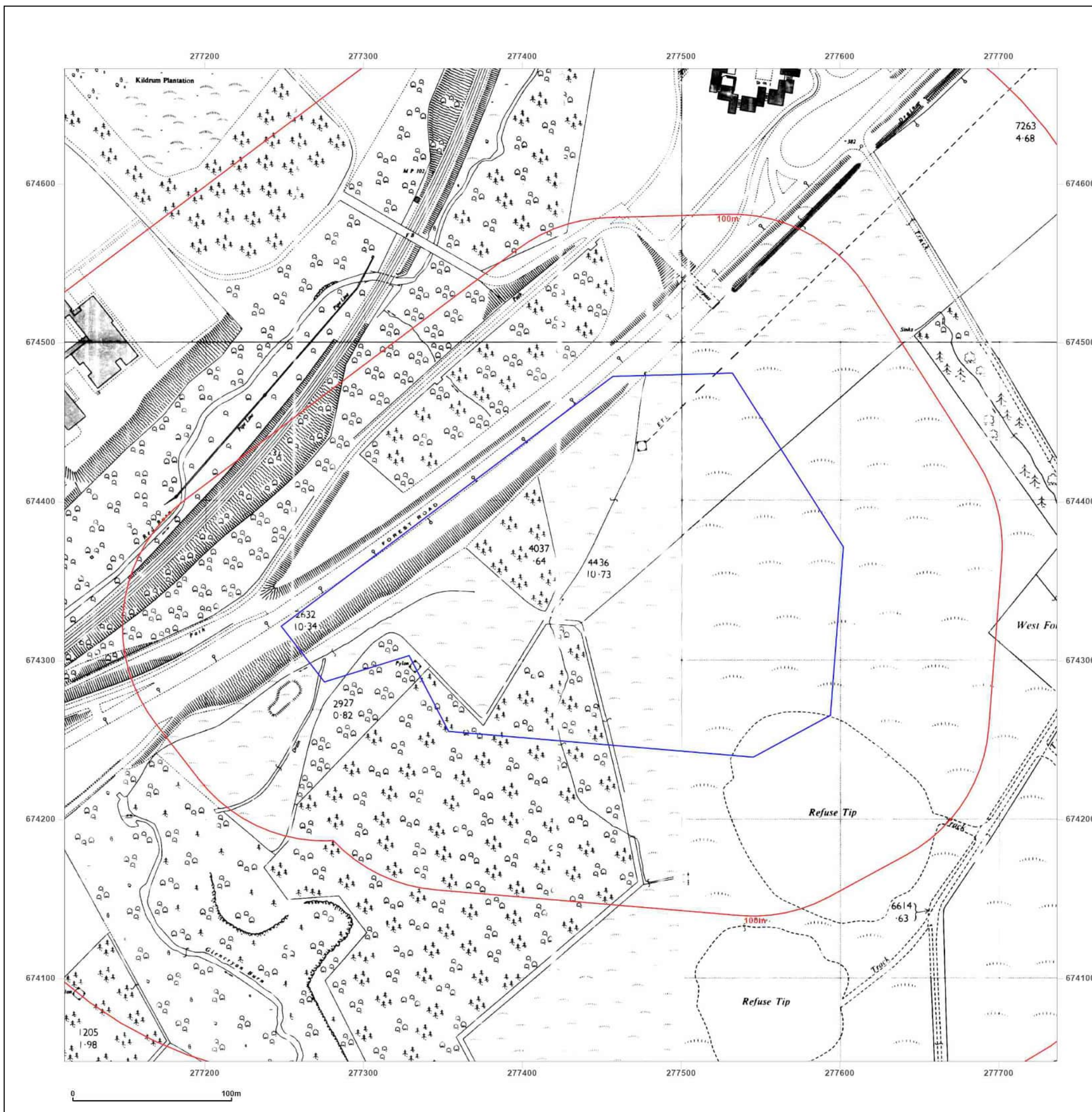


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Map Name: National Grid

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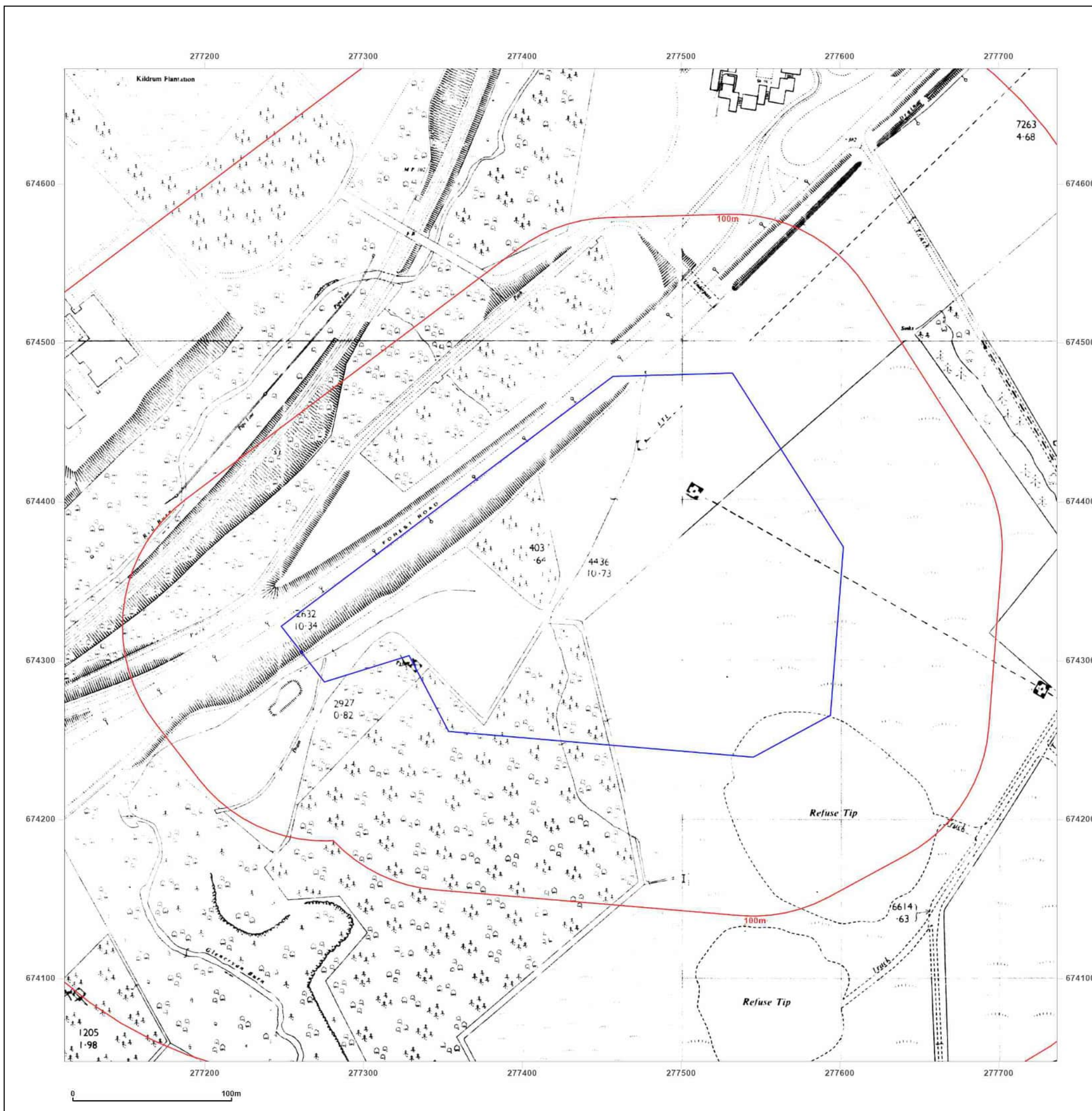


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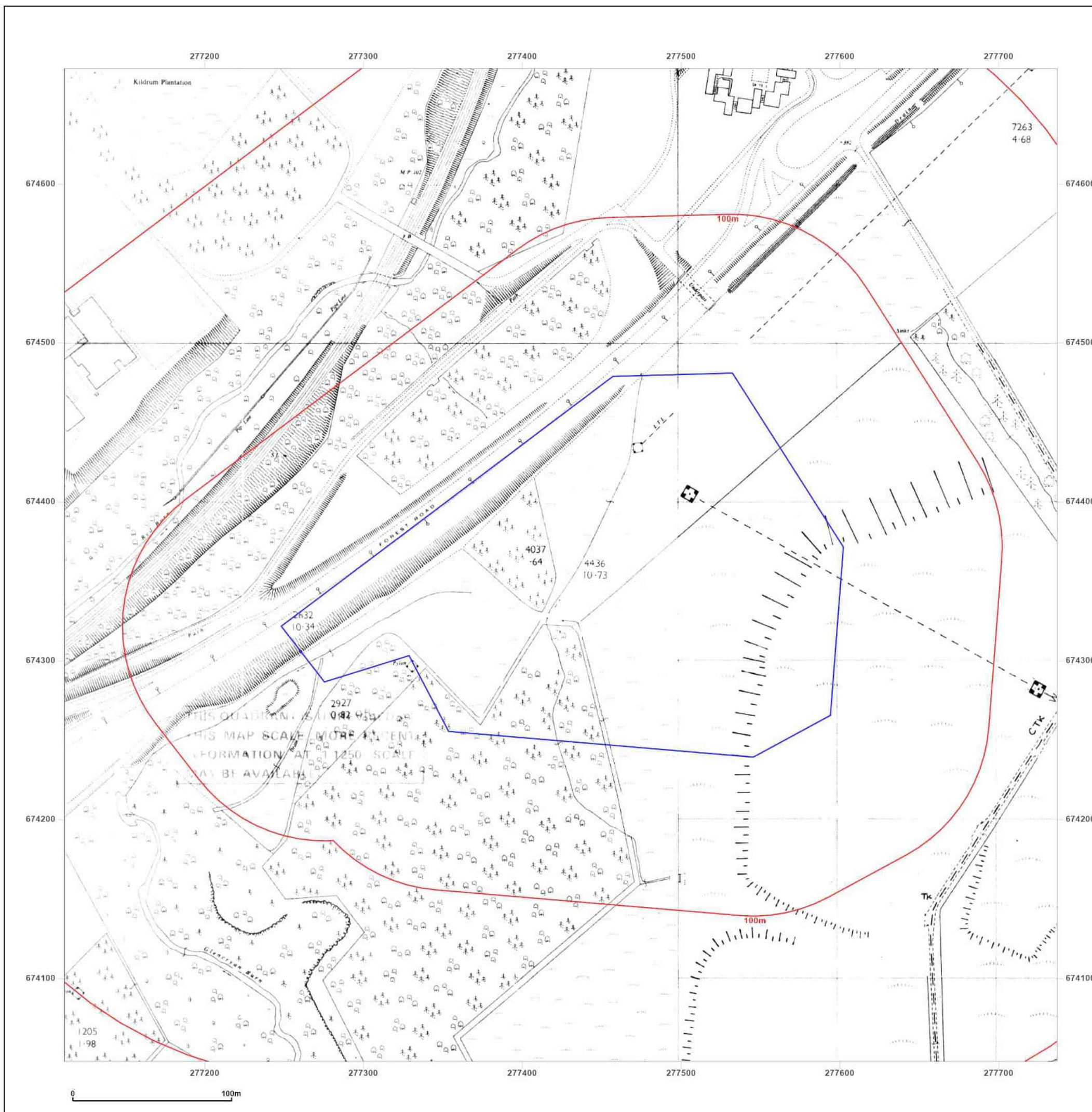


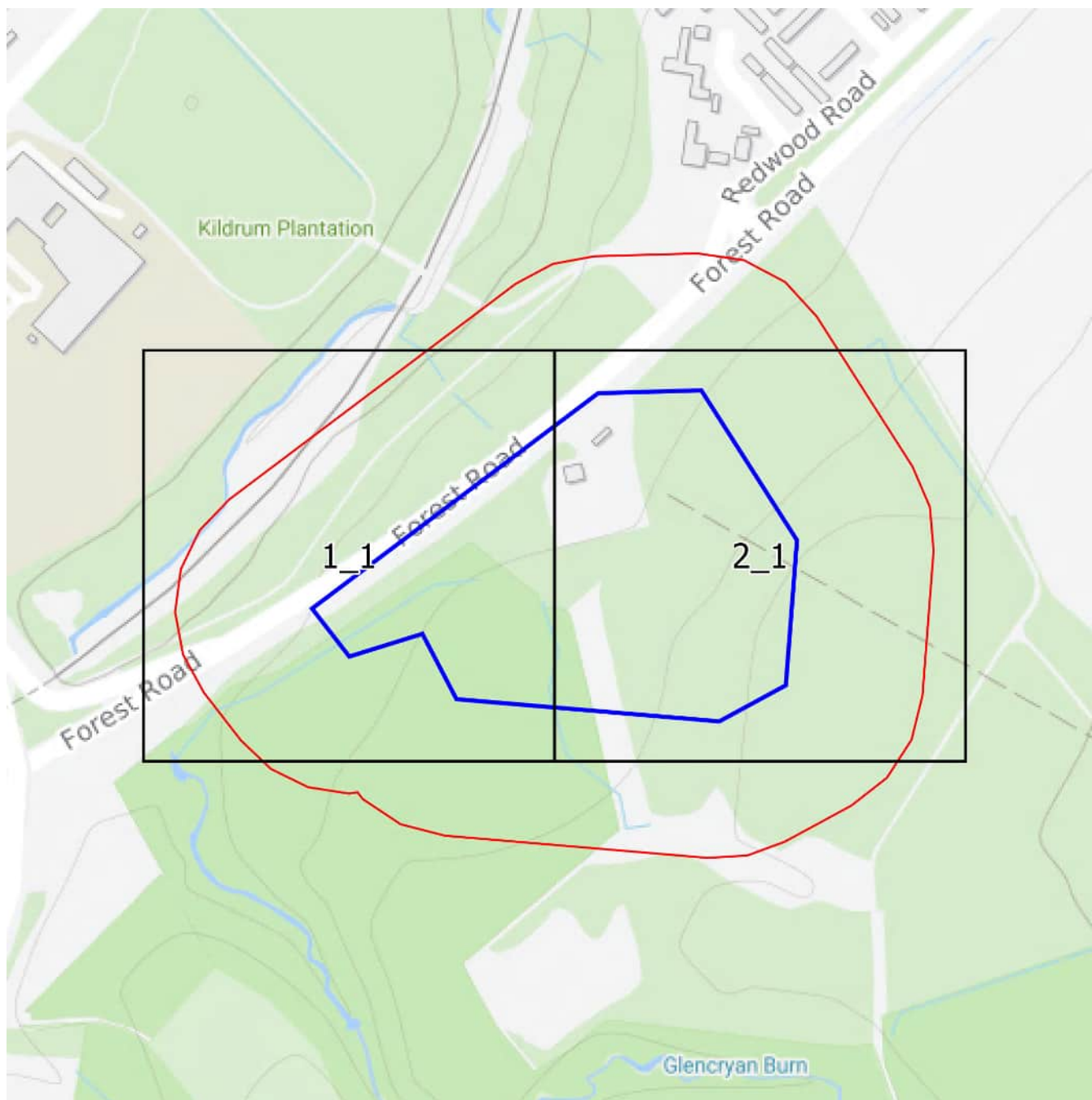
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Landline Scale Grid Index



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Grid Ref: 277275, 674360

Map Name: LandLine

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Printed at: 1:1,250



2003

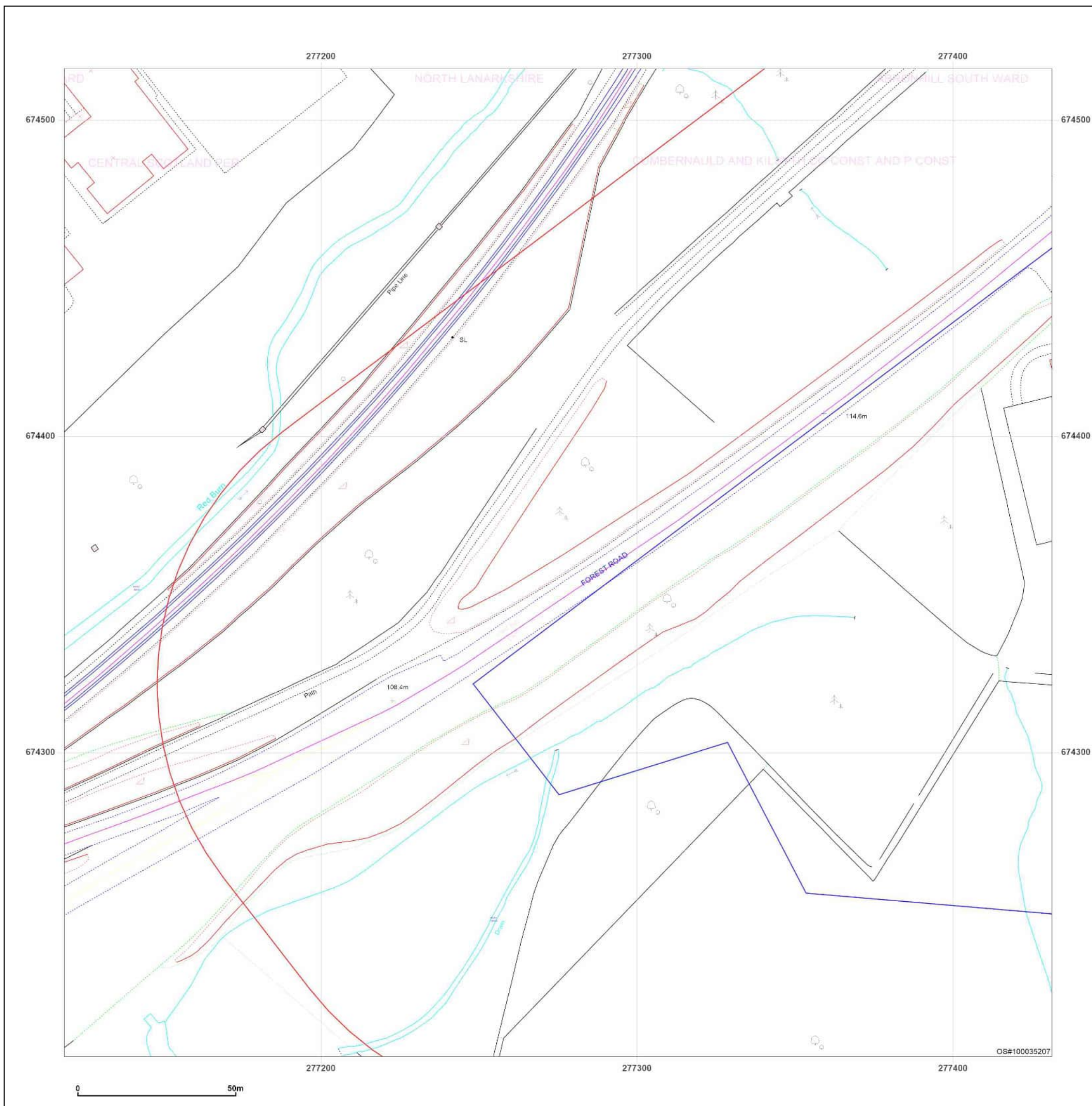


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Site Details:

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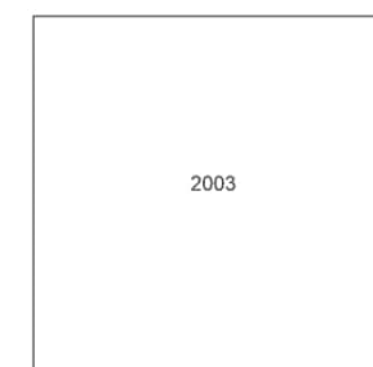
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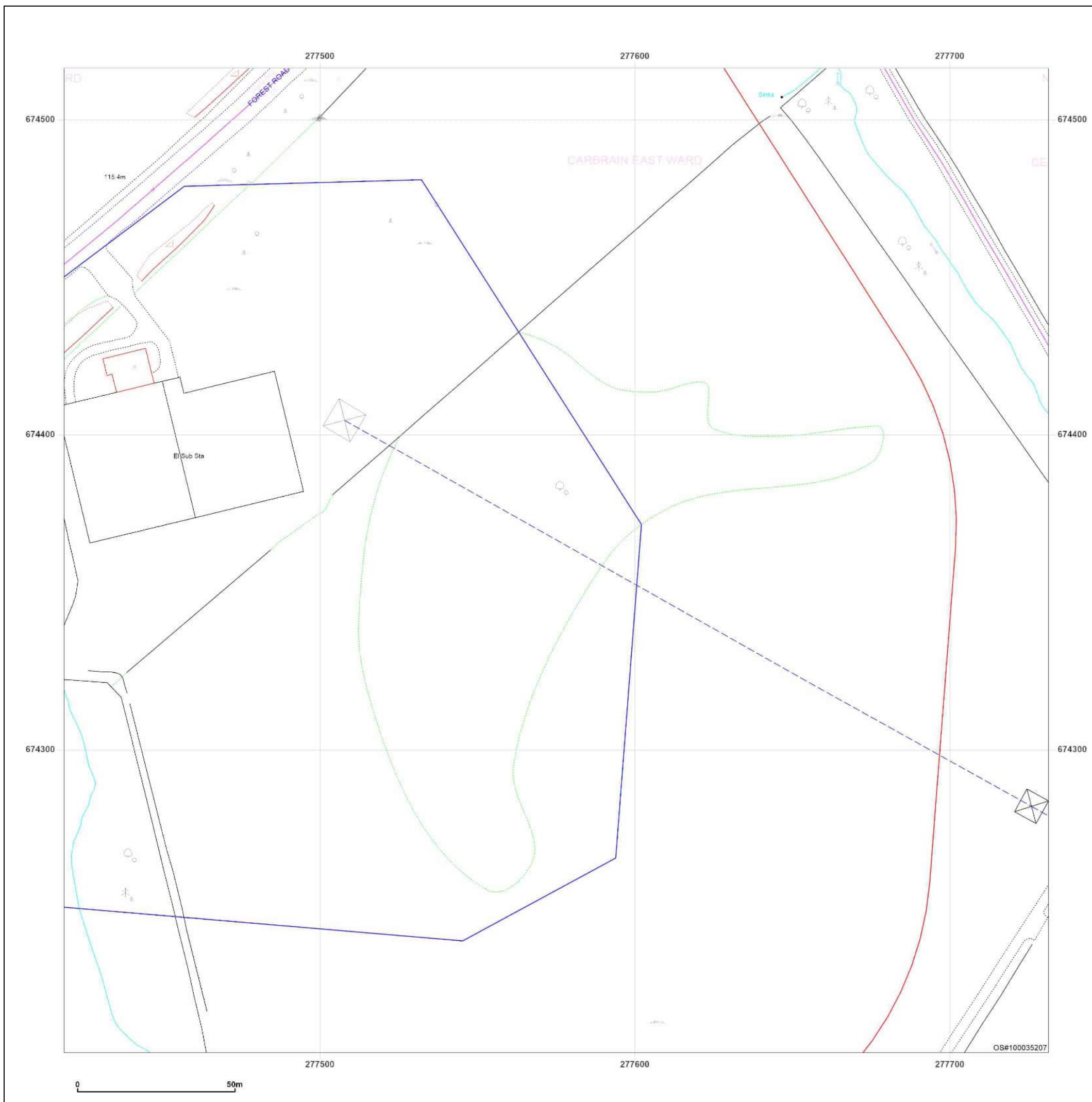


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Appendix E BGS Borehole Records



SECTION OF **CUMBERNAULD TOWER 1 BORE 1**

NS77SE/193(1)

Surface Level.....O.D.

Communicated.....**1971**.....by.....**Ross & Co**

Date of boring or sinking.....Borer.....**Hydracrat Ltd.**

One-inch Map.....Six-inch Map.....

	Thickness		Depth from Surface	
	Ft.	In.	Ft.	In.
Sandy clay	1	9	1	9
(Not cored) Sandstone	8	3	10	-
Sandstone, coarse, rusty stained, cross-stratified	10	-	20	-
Sandstone, medium and coarse white, occasional silty micaceous laminae, cross-stratified	26	10	46	10
Siltstone, sandy laminae	-	3	47	1
Mudstone, grey, laminated, scattered lamellibrancha	1	10	48	11
Siltstone grey, shell fragments	-	4	49	3
Limestone argillaceous, hard, irony, coaly roots	-	8	49	11
COAL dirty, some bright laminae	-	8	50	7
Seatrook silt grade	-	4	50	11
Sandstone silty, rooty	3	6	54	5
Sandstone grey, fine and medium cross-stratified	20	7	75	-
	75			



SECTION OF **CUMBERNAULD TO IR1 BORE 2**

NS77SE/193(2)

..... Surface Level..... O.D.

Communicated..... by.....

Date of boring or sinking..... Borer.....

One-inch Map..... Six-inch Map.....

	Thickness		Depth from Surface	
	Ft.	In.	Ft.	In.
No core	10	-	10	-
Sandstone, medium and coarse mudstone stained at top, cross-stratified. Sharp base	37	7	47	7
Siltstone sandy laminae burrowed	-	6	48	1
Mudstone, scattered shell scraps, silty at base much fragmentary shell debris	4	5	52	6
Limestone, argillaceous, shell scraps	1	-	53	6
COAL	-	6	54	-
Sestolay	-	6	54	6
Sandstone, rooty	2	1	56	7
Sandstone, grey, fine, cross-stratified	11	5	68	-
	68	-		



Dur. File XXXIV.2

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TELEPHONE AIRDRIE 3140

BORE JOURNAL

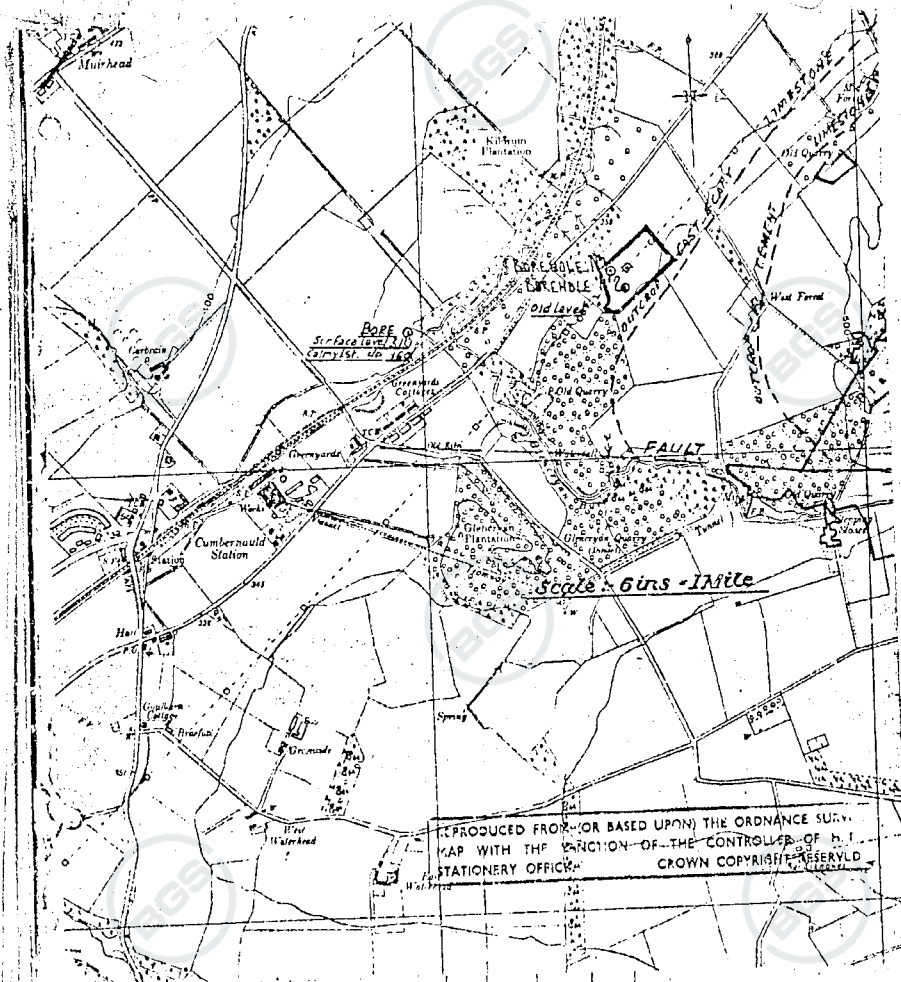
Site Cumbernould. Date Started _____
Date Finished 23.3.64

Borehole No. _____ O.D. of Ground Surface _____ Total Depth _____

Type of Boring _____

Water Struck at _____ ft.

Date	Strata	Thickness Fe.	Ins.	Progressive Depth ft.	Remarks
	Bore No. 1.				7744 / 7443
	Peat, Moss, Sandstone	5	0	5	0
	Boulders.	5	0	10	0
	Soft Sandstone.	2	0	12	0
	Sandstone (Brown)	14	0	26	0
	Sandstone.	2	0	28	0
	Soft Blaes (Broken	2	0	30	0
	Jointed)	2	6	32	6
	Soft Doughy Blaes.	0	6	33	0
	Fakes.	0	6	33	6
	Limestone.	0	6	34	0
	COAL	0	5	34	5
	Fire Clay.	0	8	35	1
	Fakes.				
	Fakes, Sandstone	2	6	37	7
	Plies.	0	6	38	1
	Sandstone.	4	4	42	5
	Sandstone.	6	7	49	0
	Sandstone	4	6	53	6
	Sandstone.	1	5	54	11
	Blaes.	0	8	55	7
	Fire Clay.	1	11	57	6
	Fakey Fire Clay.	7	6	65	0
	Sandstone.				





Doc. File - XXXIV-2

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BORE JOURNAL

Site Cumbernauld.

Date Started

Date Finished 23.3.64.

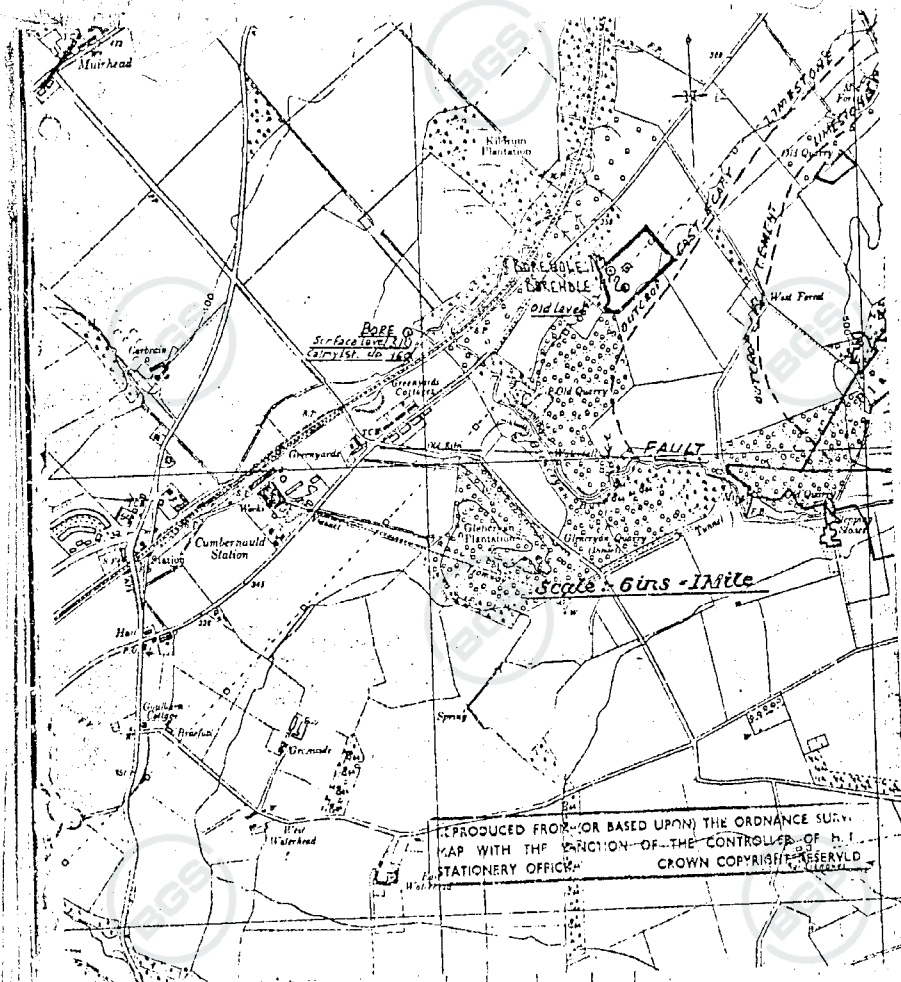
Anchor Hole No. O.D. of Ground Surface

Total Depth

Type of Boring

Depth of Boring

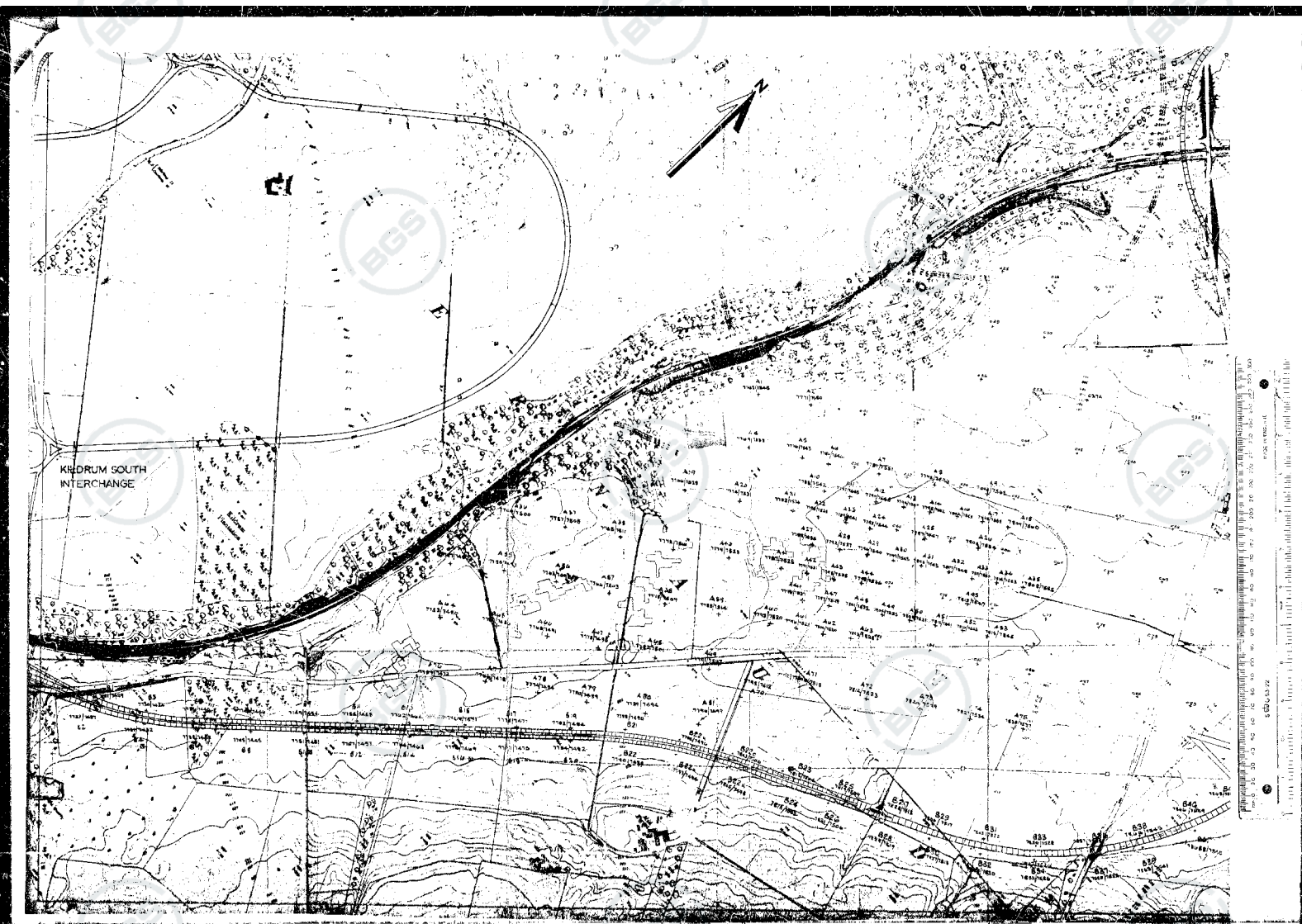
	Thickness Ft.	Inch.	Positive Depth	Remarks
Bore No. 2.				7748/7439
Soil	1	0	1	0
Sandstone (Brown)	8	0	9	0
Sandstone (Brown)	6	6	15	6
Sandstone (Grey)	21	9	37	3
Soft Doughy Fakes.	2	2	40	5
Limey Fakes, Pyrites				
Falls, Coal Veins.	0	10	41	3
COAL	0	3	41	6
COAL	0	3	41	9
Soft Fireclay.	0	6	42	3

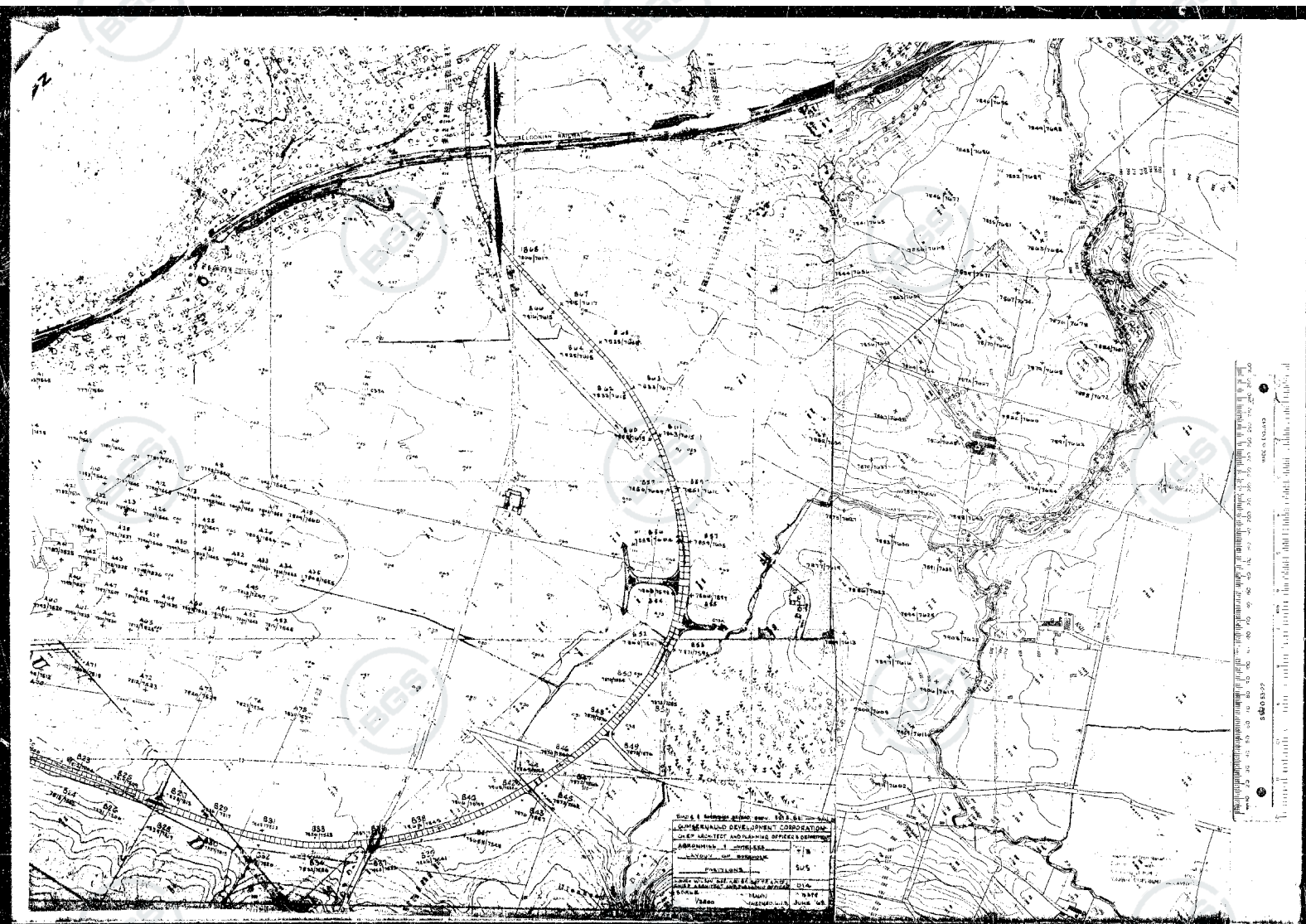


ADROMHILL AND WHITELEES BOREHOLE INFORMATION

To be read in conjunction with Plan No. T/B. SUS. 014

	Thickness			Depth from Surface		
	Fathoms	feet	ins.	Fathoms	feet	ins.
<u>Borehole No. B.1. - 7721/7429</u>						
Sandy Soil.	-	1	3	-	1	3
Soft Brown Sandstone.	-	3	7	-	4	10
Sandstone. (Broken).	-	5	5	-	10	3
Firm Dark Fakes and Sandstone Ribs.	-	6	3	-	16	6
Firm Sandstone.	-	3	-	-	19	6
N.B. Water Level - 13'6"						
<u>Borehole No. B.2. - 7723/7427</u>						
Sandy Soil.	-	-	6	-	-	6
Sandstone. (Broken).	-	6	3	-	6	9
Firm Sandstone.	-	3	-	-	9	9
N.B. Borehole Dry.						
<u>Borehole No. B.3. - 7730/7434</u>						
Surface Soil.	-	1	-	-	1	-
Brown Clay and Stones.	-	1	-	-	2	-
Soft Dark Clay and Stones.	-	4	-	-	6	-
Fakes and Sandstone Ribs.	-	-	9	-	6	9
Firm Sandstone.	-	3	-	-	9	9
N.B. Water Level - 2'0"						
<u>Borehole No. B.4. - 7731/7432</u>						
Surface Soil.	-	-	6	-	-	6
Soft Brown Clay and Stones.	-	1	6	-	2	-
Soft Dark Brown Clay and Stones.	-	-	6	-	2	6
Coarse Sandstone and Soft Ribs.	-	4	6	-	7	-
Firm Sandstone.	-	3	-	-	10	-
N.B. Water Level - 2'0"						
<u>Borehole No. B.5. - 7736/7440</u>						
Surface Soil.	-	-	9	-	-	9
Soft Sandstone.	-	6	3	-	7	-
Firm Sandstone.	-	3	-	-	10	-
N.B. Borehole Dry.						
<u>Borehole No. B.6. - 7738/7438</u>						
Surface Soil.	-	-	6	-	-	6
Soft Sandstone.	-	7	6	-	8	-
Firm Sandstone.	-	3	-	-	11	-
N.B. Borehole Dry						
<u>Borehole No. B.7. - 7743/7446</u>						
Surface Soil.	-	1	2	-	1	2
Soft Sandstone. (Broken).	-	2	8	-	3	10
Sandstone.	-	3	-	-	6	10
N.B. Borehole Dry.						





Borehole No. B.8. - 7745/7445

Mossy Soil.	-	1	8	-	1	8
Decomposed Sandstone.	-	4	2	-	5	10
Soft Sandstone.	-	1	2	-	7	-
Sandstone.	-	3	-	-	10	-

N.B. Water Level - 1'3"

Borehole No. B.9. - 7749/7454

Mossy Soil.	-	1	2	-	1	2
Soft Sandstone. (Broken).	-	1	10	-	3	-
Sandstone.	-	3	-	-	6	-

N.B. Borehole Dry

Borehole No. B.10. - 7751/7451

Mossy Soil.	-	1	-	-	1	-
Very Soft Grey Silty Clay.	-	5	9	-	6	9
Soft Sandstone. (Broken).	-	7	3	-	14	-
Sandstone.	-	5	-	-	17	-

N.B. Water Level - 3'0"

Borehole No. B.11. - 7755/7458

Surface Soil.	-	-	6	-	-	6
Soft Brown Sandy Clay.	-	1	8	-	2	2
Soft Sandstone. (Broken).	-	4	-	-	6	2
Soft Grey Fakey Sandstone.	-	2	-	-	8	2
Soft Sandstone.	-	-	8	-	8	10
Sandstone.	-	3	-	-	11	10

N.B. Water Level - 5'0"

Borehole No. B.12 - 7757/7457

Surface Soil.	-	-	9	-	-	9
Soft Brown Sandy Clay.	-	3	2	-	3	11
Soft Fakey Sandstone. (Broken).	-	3	3	-	7	2
Soft Sandstone.	-	1	10	-	9	-
Sandstone.	-	3	-	-	12	-

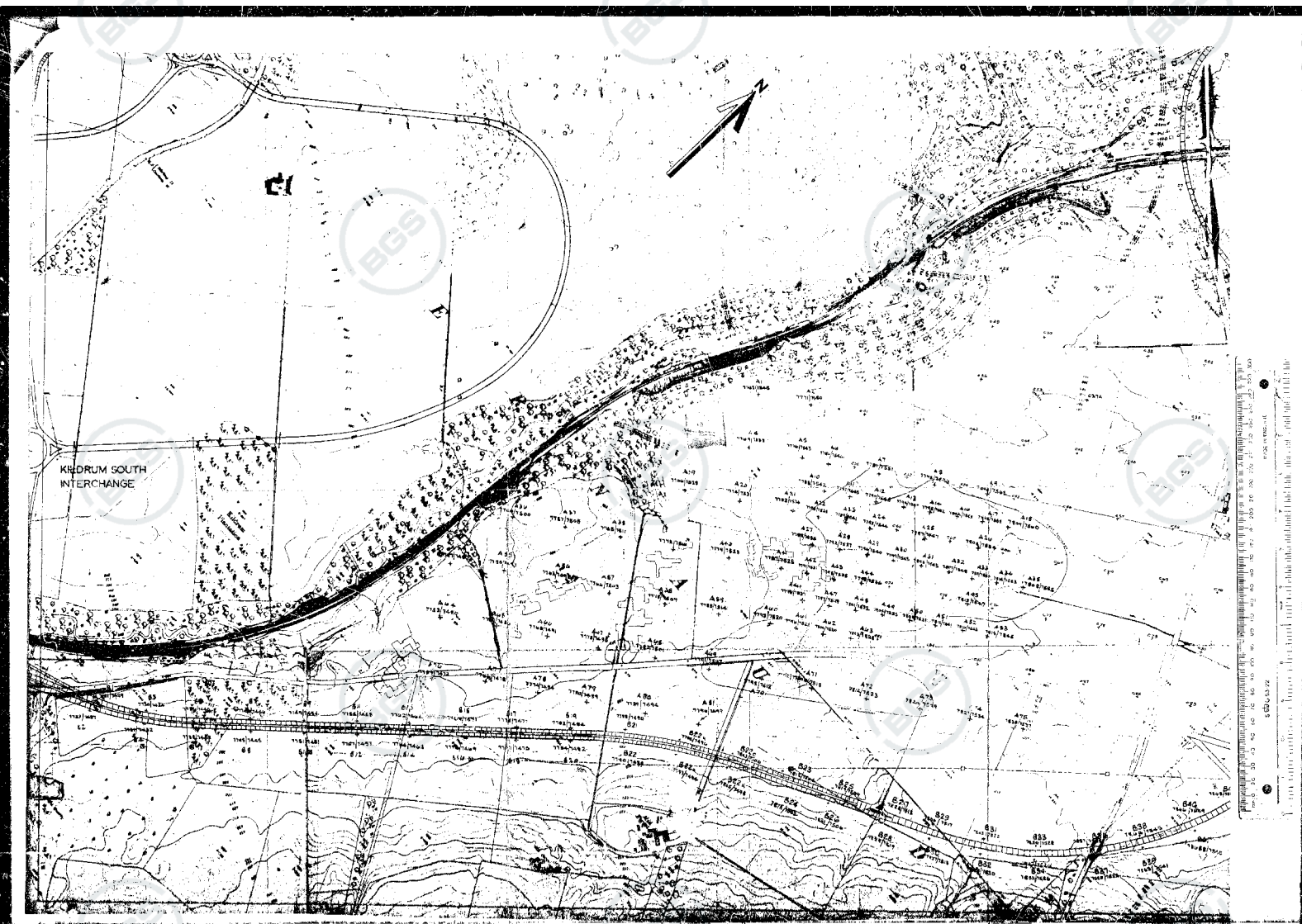
N.B. Water Level - 5'0".

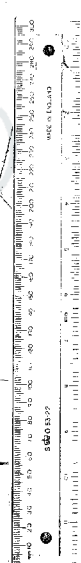
Borehole No. B.13. - 7762/7464

Surface Soil.	-	-	6	-	-	6
Peat.	-	1	1	-	1	7
Soft Grey Sandy Clay.	-	1	-	-	2	7
Soft Fakes.	-	7	-	-	9	7
Sandstone. (Broken).	-	3	3	-	12	10
Sandstone.	-	3	-	-	15	10

Borehole No. B.14. - 7764/7463

Surface Soil.	-	-	7	-	-	7
Soft Grey Sandy Clay.	-	1	8	-	2	3
Decomposed Sandstone.	-	3	-	-	5	3
Soft Fakes.	-	1	4	-	6	7
Firm Dark Fakes.	-	6	-	-	12	7
Fakes and Sandstone Ribs.	-	2	5	-	15	-
Sandstone.	-	3	-	-	18	-





Appendix F Historical Reports

SPEN Project Title/Number: DWNO - Denny Wishaw 400kV Reinforcement

Contractor Information

Contractor Name: **Morgan Sindall Infrastructure**

Contract/PO Number: **22119**

Contractor Document Number: **22119-BHK-CUMB-SUB-RA-C-000100**

Contractor Revision: **P01**

Full Document Title: **Cumbernauld Mining Risk Assessment**

SPEN Document Number: **DWNO-MORG-CS-CUMBSUBS-AR-CC-0100**

Total Number of Pages: **71**

Document Revision History/Reason for Issue

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Rev				
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Rev				
Rev				
Rev	P01	Issued for Review and Comment	Joe Doyle	Karel Elias
Reason For Issue:- i.e. Design/Construction/As-Built/Closeout			*Checked By	*Approved By

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MINING RISK ASSESSMENT

DWNO – Cumbernauld 275kV Substation

REFERENCE: 22119-BHK-CUMB-SUB-RP-G-000100 P01

Prepared for:

Morgan Sindall

04 September 2025

BakerHicks.

DOCUMENT VERIFICATION.

Project title: DWNO

Project number: 30004787

Document title: Mining Risk Assessment

Document reference: 22119-BHK-CUMB-SUB-RP-G-000100

Rev		Date			
P01	04/09/2025	File name	22119-BHK-CUMB-SUB-RP-G-000100		
		Description	First Issue – For Information		
			Prepared by	Checked by	Approved by
		Name	Kevin Perreau	James Hannah	James Scott
		Date	25/08/2025	02/09/2025	03/09/2025

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1. Introduction

Baker Hicks Ltd (BakerHicks) was appointed by Morgan Sindall on behalf of Scottish Power to undertake a Mining Risk Assessment (MRA) for the new Cumbernauld 275/33kV Substation for the Denny to Wishaw Network Optimisation (DWNO) project (refer Section 1.4) located within and adjacent to the existing Cumbernauld 132/33kV Substation compound.

This report presents a mining risk assessment to understand the risks to the scheme in relation to historical coal and non-coal mining activities.

1.1. Proposed Developments

The DWNO project herein, involves the construction of an approximate 19km section of new 400kV double circuit overhead line from the existing Bonnybridge 275/132kV Substation to the existing Easterhouse – Newarthill overhead line route, establishing a fourth north to south double circuit overhead line route.

As a part of the overall works, the DWNO project shall involve the establishment of a new Cumbernauld 275/33kV Substation within and adjacent to the existing Cumbernauld 132/33kV Substation compound, including land purchase as required to facilitate the compound extension. SPEN (Scottish Power Energy Network) are proposing to extend the substation to the southeast to allow the construction of new electrical plant, support structures and associated equipment required for the DWNO reinforcement works.

1.2. Scope and Objectives

The purpose of this MRA is to collate the available geological, mining and historical data for the site in order to assess the potential for the proposed works to be affected by, or to affect, mining assets within the site boundary or within influencing distance.

A risk assessment will be presented with consideration specifically for the proposed development.

This report will solely focus on the proposed development of Cumbernauld substation, in which the site boundary includes the current proposed extension works and future substation expansion.

The mining risk related to the proposed pylons that will be connected to Cumbernauld substation, as part of the 'WB Route', are not included within this report. Refer to the BakerHicks DWNO – WB Route, XX Tie-in & AA UGC Mining Risk Assessment (30004787-BHK-XX-XX-RP-GE-00002, Ref. [1]) for the mining risk related to the pylons.

1.3. Sources of Information

The information included in this report has been obtained from the following sources, often using data from the BGS (British Geological Survey) and the Mining Remediation Authority:

- BGS 1:10,560 Series sheet NS77SE; Solid Geology (Ref. [2]); and Drift Geology (Ref. [3])
- BGS GeoIndex and historical boreholes (Ref. [4])
- Mining Remediation Authority interactive maps (Ref. [5])
- Consultants Coal Mining Report (obtained by BakerHicks May 2025) (Ref. [6])
- Groundsure Report GS-VN1-A5T-7OP-LHW (obtained by BakerHicks May 2025) (Ref. [7])
- Scotsoil Survey Limited (Scotsoil) Cumbernauld 132kV Substation Site Investigation Report (Ref. [8])
- JWH Ross & Company (JWH Ross) Mining Report (Ref. [9])
- Geology of the Falkirk district memoir for 1:50,000 geological sheet 31E (Ref. [10])

1.4. Site Description

The existing Cumbernauld 132/33kV substation is located to the immediate east of Cumbernauld, North Lanarkshire at approximate co-ordinates 277445E, 674397N. The substation is accessed from Forest Road to the north and east of the substation, and is bound by woodland to the west, south and east. A number of overhead lines (OHL) extend from the substation to the south and southeast. Refer to Figure 1-1 for the site location plan.



Figure 1-1 Site Extents

1.5. Assumptions and Limitations

BakerHicks is responsible for selecting and summarising the data supplied by the Client or other parties but cannot be held responsible for any mistakes or inaccuracies or the completeness of third-party data on which it has relied.

This report has been prepared solely for Morgan Sindall and the Client in connection with the DWNO scheme. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party. The report has considered publicly available information and databases; conditions and features may exist that have not been included within such databases, therefore, features may be present that have not been considered as part of the study.

The scope of this report considers the Mining Risk Assessment only and does not consider other ground/environmental/archaeological risks & constraints. Liaison with third parties such as local councils is outside the scope of this report.

2. Geological Setting

2.1. Geology

A summary of the geological conditions at the site is provided within this section. The geological information for the site was obtained from BGS mapping information and BGS GeoIndex as detailed in Section 1.3.

2.1.1. Artificial Geology

Made Ground is likely to be present across the existing Cumbernauld substation associated with its development, although none is mapped on published information. There is currently no further information on the depth and composition of the Made Ground.

2.1.2. Superficial Geology

Published geological mapping records Glacial Till around the southeast extents of the site, adjacent to the existing Cumbernauld substation. Glacial Till which are a diamicton (an unsorted mix of silt, sand, gravel, cobbles and boulders in a clay matrix) of the Devensian Glaciation which occurred approximately thirty-three to twelve thousand years ago. Glacial Tills are typically firm to very stiff clays, although can be weathered towards the surface causing softening and mottling. Coarse-grained horizons within the till can also be present but these are unlikely to be in continuous bands.

Consulting CIRIA guidance C758D (Ref [11]), it is noted that stiff Glacial Tills found in Scotland can contribute to stability over abandoned mine workings and may have the ability to span over voids however this is dependent on the thickness and nature of the Glacial Till and caution needs applied when exercising such a principle.

2.1.3. Solid Geology

The NS77SE Drift mapping (Ref [3]) indicates shallow bedrock across a majority of the site, which corresponds to where Glacial Till is not recorded, as discussed above in Section 2.1.2.

The bedrock of the site belongs to the *Clackmannan Group*, Carboniferous in age, specifically the *Upper Limestone Formation*. The NS77SE Solid mapping (Ref [2]), indicates that the *Upper Limestone Formation* comprises sandstones, siltstones and mudstones with limestones and coals. The solid mapping further indicates the bedrock is faulted. A normal fault, denoted as '*Glencryan Fault*' is recorded approximately 270m south of site, orientated west to east, and downthrown 35m south.

The presence of faulting can act as a natural barrier to the progression of mine workings, however faults are not recorded within the immediate vicinity of the site. Faulting can also affect the depths of superficial soil which may affect the design of the foundations for the site.

A series of coal seams outcrop in the vicinity of the site as recorded within the Groundsure Report (Ref. [7]) and BGS geological mapping. Particular named mineral seams surrounding the site include:

- Glenboig Lower Fireclay (outcropping approximately 275m east)
- Netherwood Coal (outcropping approximately 480m east).

In addition, three limestone outcrops are recorded in vicinity of the site, notably:

- Plean No.2 Limestone Outcrop (approximately 70m northwest of the substation).
- Castlecary Limestone Outcrop (approximately 115m east of the substation)
- Roman Cement Limestone Outcrop (approximately 230m east).

An extract of the BGS 1:10,560 NS77SE solid mapping (Ref [2]) with the site boundary can be seen as Figure 2-1.

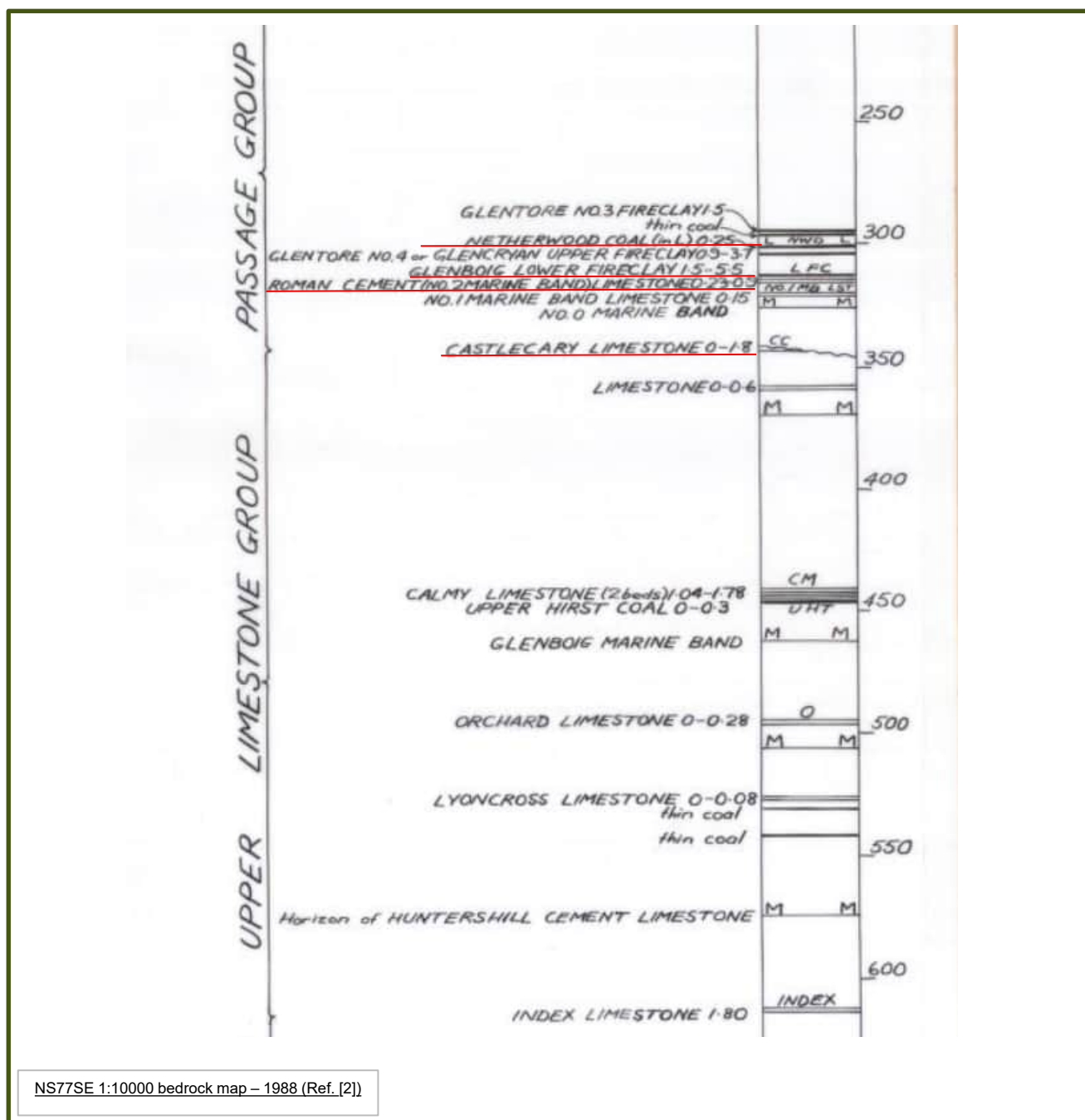


Figure 2-2: Stratigraphic Column of Sedimentary Rocks

3. Assessment Methodology

3.1. General

This section explains the rationale behind the methodology used in determining mining related risk for the development. It details how the risk from mine entries and shallow workings have been derived, the conclusions of which have been detailed in Section 4.11.

3.2. Mine Shafts

A mine shaft is a vertical entrance to a mineral seam or workings. Based on a review of the Mining Remediation Authority (Ref. [5]), Consultants Coal Mining Report (Ref. [6]) and Groundsure Report (Ref. [7]) there are no recorded mine shafts within 250m of the site.

3.3. Mine Adits

A mine adit is horizontal or near horizontal entrance into a mineral seam or working, typically encountered where a mineral outcrop is present near the surface and/or topography allows the formation of adits for access, drainage, ventilation or mineral extraction.

Adit orientation has been derived from Mining Remediation Authority information and as such can be used to determine the likely direction of workings from the adit entry/exit. This has been compared with known coal outcrops to assess the likelihood of workings beneath the development. A collapse cone would not occur on the same scale as with a shaft failure and any failure of an adit may exhibit itself as a linear crown-hole with extent depending on the dip of strata and subsequent increase in rock cover. The risk from mine adits may be greater where the dip of strata is shallow; therefore, strata dip has been utilised in the risk assessment. Due to the nature of adits, where workings develop from rockhead, there exists a crossover between *shallow workings* and what is deemed an adit.

The following risk ratings have been applied in the assessment:

- A mine adit is considered **high** risk to the development if the orientation is directed towards the development and is within 20m; or is within 10m regardless of orientation.
- A mine adit is considered **medium** risk if the orientation is directed towards the development but is between 20m and 40m away; or is within 20m but orientated away from infrastructure.
- A mine adit is considered **low** risk if it falls outside the above criteria.

3.4. Shallow workings

Shallow workings have often been regarded as mineral extraction less than 30m deep below rockhead, as per published guidance (Ref [11]). Extraction at shallow depths has the highest risk of void migration (manifestation of collapsed workings at the surface) usually due to having the least amount of rock cover above workings. A widely accepted industry practice is the '10t' criterion, where the competent rock cover (of known weathering, material strength and jointing) above a working should be greater than 10x the working thickness (seam plus overbreak) in order to prevent void migration from reaching the surface. Figure 3-1 below details the rule, extracted from Ciria C758D Ref [11].

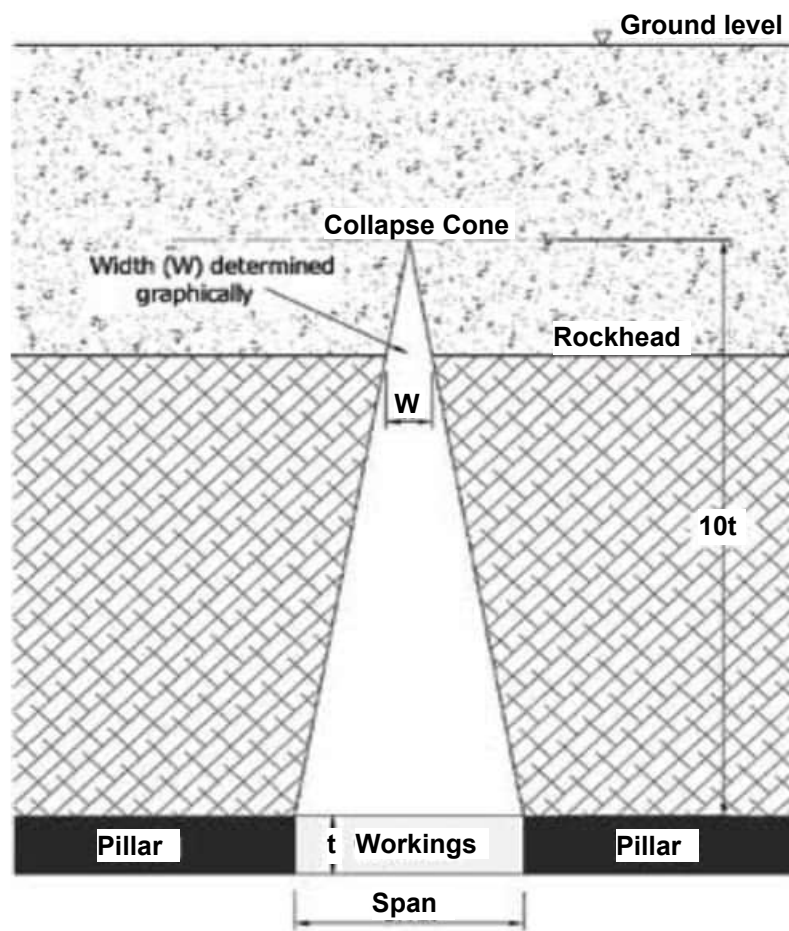


Figure 3-1: Extract from CIRIA C758D detailing '10t' rule

The risk from shallow workings has been examined. To assess this, the following parameters have been utilised, derived from 1:10000 bedrock maps and the Mining Remediation Authority:

- Known coal outcrop positions and distances from the development.
- Strata dip and direction
- Published thicknesses of economic coal seams and worked seam thicknesses from the Consultants Coal Mining Report.
- Presence of faulting severing coal seams and any workings.
- Published information and engineering experience of bedrock formations in the area.

Using the above, the likely depth of economic coal seams beneath the site can be calculated and an estimate of the amount of rock cover above potential workings can be produced. This assessment assumes that if a shallow coal seam intersects the site, it has been worked; in reality not all seams will have been excavated, but the potential for workings exists.

It should be noted that stiff over consolidated glacial tills found in Scotland, which are likely present on site through examination of desk study materials, can add to the stability above workings and may provide a contribution to rock cover of half its thickness, e.g. 10m of stiff glacial till would provide a 5m contribution of "rock cover". For conservatism, this has not been considered in the assessment.

The likelihood of probable shallow workings beneath the development has been categorised as unlikely, possible or likely.

3.5. Mine Gas and Spontaneous Combustion

At this stage of the project, detailed assessment of mine gas and spontaneous combustion risk is not possible. No information relating to mine gas / combustion risk is currently available from the collated information stated in Section 1.3.

Proposed ground investigation shall allow gas monitoring at all pylon sites and allow characterisation of made ground materials including colliery spoil that may be at risk of spontaneous combustion. This in turn shall allow further assessment of these risks, with outcomes discussed in subsequent Ground Investigation Report (GIR) and risk register.

3.6. Limitations on methodology

Although there is one ground investigation carried out within the site, i.e. Scotsoil 1966 GI, there is no reliance on the accuracy of the data. Depth to rockhead has been estimated on historical GI data. Actual depth to rockhead may vary. In addition to this, there remains a possibility that local conditions may vary. Historic development, unrecorded or otherwise, may result in the presence of Made Ground that will not be captured by historical GI, much of which was drilled many decades ago.

No information is available pertaining to groundwater levels within the site, although historical GI data and flood potential using SEPA information (Ref [12]) has been considered.

From 1:10000 mapping information, there is evidence of folding within the strata in some instances. This will cause variation in dip of the rock and subsequent coal seams, which presents the possibility of inaccuracies in predicting depths of coal seams beneath the development. Where folding is thought to be present, this has been noted in the assessments.

The assessments have not considered the possibility that mine entries and potential workings may be backfilled with mining waste; a practice that was undertaken in some mines upon abandonment. Packing waste into workings would help support the workings and help prevent void migration to the surface. However, the methods and materials used vary considerably and cannot be relied upon to fully combat collapse in workings.

Prior to 1840, it was not a legal requirement for mine owners to produce plans of the areas and depths worked. Much of the source material used in this assessment is based on information post-1840. Although there remains a risk unrecorded mining exists across the site from pre-1840, this report aims to extrapolate geological mapping and outcrops to determine the risk of mining regarding economical seams beneath the site.

4. Mining Assessment

4.1. General

A previous ground investigation (GI) was undertaken by Scotsoil Survey Limited (Scotsoil) in 1966 (Ref. [8]) to assess the suitability of the site for the proposed development of a new 132kV substation. The full report is available in Appendix B. It should be noted that the Scotsoil GI Report did not provide co-ordinates. The GI location plan provided within the report, has been overlayed and compared with historical mapping, but BakerHicks cannot confirm the accuracy of the positions. It should also be noted that the Scotsoil GI was carried out prior to the construction of the substation, therefore levels of boreholes and subsequent earthworks as part of substation construction would have affected the ground model beneath the site.

The site, with BGS and Scotsoil GI exploratory holes is presented in Figure 4-1 below.



Figure 4-1: BGS Borehole Location Plan

Extract from the Mining Remediation Authority Map Viewer is shown in Figure 4-2 below, showing that the site is not with a *Development High Risk Area*, nor in an area of *Past Shallow Mine Workings*. The only two relevant mine entries (adits) to the proposed development are shown as 277674-001 and 277674-002.

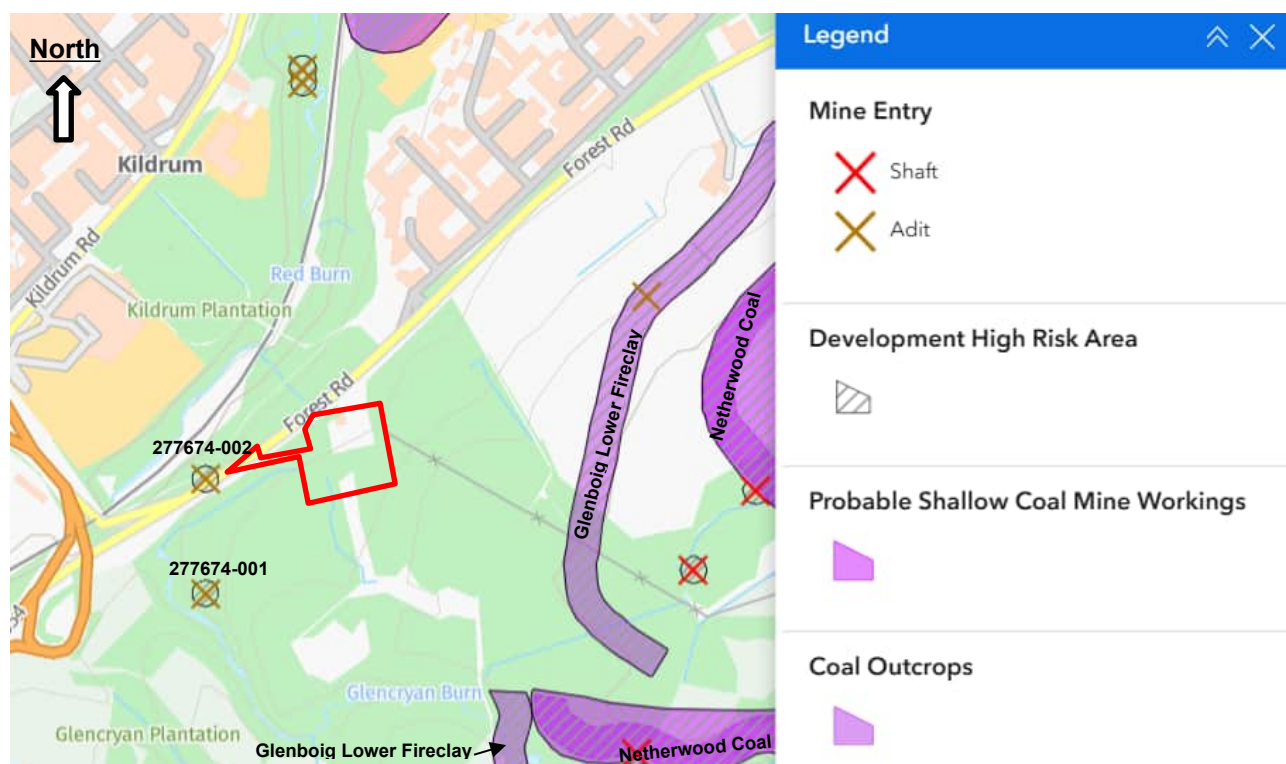


Figure 4-2: Mining Remediation Authority Extract (Ref. [5])

4.2. Previous Ground Investigation

Existing available ground investigation information relevant to the site is detailed in Table 4-1. In general, existing GI information shows peat / sandy clay of thicknesses varying from 0.2m to 3.0m upon sandstone. It should be noted that the Scotsoil GI boreholes only went up to 3.05m into bedrock.

Table 4-1: Cumbernauld Substation Previous Ground Investigation

Borehole ID	Distance (m)	Strata	Depth (m bgl)		Thickness (m)	Comment
			From	To		
Scotsoil Cumbernauld 132kV Site Investigation						
BH1 (1966)	On site	Peaty topsoil	0.0	0.5	0.5	<u>Initial Water Level:</u> 1.0m bgl
		Sandy clay	0.5	1.1	0.6	<u>Final Water Level:</u> 1.0m bgl
		Bedrock: Sandstone	1.1	4.1	3.0	
BH2 (1966)	On site	Peat	0.0	2.0	2.0	<u>Initial Water Level:</u> 1.7m bgl
		Sandy clay	2.0	2.6	0.6	<u>Final Water Level:</u> 1.7m bgl
		Bedrock: Sandstone	2.6	4.7	2.1	
BH3 (1966)	On site	Peat	0.0	0.6	0.6	<u>Initial Water Level:</u> 0.9m bgl
		Bedrock: Sandstone	0.6	3.4	2.8	<u>Final Water Level:</u> 0.9m bgl

Borehole ID	Distance (m)	Strata	Depth (m bgl)		Thickness (m)	Comment
			From	To		
BH4 (1966)	On site	Topsoil	0.0	0.2	0.2	<u>Initial Water Level:</u> Dry
		Bedrock: Sandstone	0.2	2.7	2.5	<u>Final Water Level:</u> Dry
BH5 (1966)	On site	Topsoil	0.0	0.2	0.2	<u>Initial Water Level:</u> Dry
		Bedrock: Sandstone	0.2	3.0	2.8	<u>Final Water Level:</u> Dry
BH6 (1966)	On site	Peaty topsoil / peat	0.0	1.4	1.4	<u>Initial Water Level:</u> 0.8m bgl
		Bedrock: Sandstone	1.4	4.2	2.8	<u>Final Water Level:</u> 0.8m bgl
BH10 (1966)	On site	Topsoil	0.0	0.3	0.3	<u>Initial Water Level:</u> Dry
		Bedrock: Sandstone	0.3	3.0	2.7	<u>Final Water Level:</u> Dry
BGS Boreholes						
NS77SE5758/1 (1964)	30m south of access track	Peat, moss, sandstone boulders	0.0	1.5	1.5	Limestone – 10.06m bgl (0.15m thickness) Coal – 10.21m bgl (0.15m thickness)
		Bedrock: Sandstone, blaes, fakes, limestone, coal, fireclay & plies	1.5	19.8	18.3	
NS77SE5758/2 (1964)	40m south of access track	Soil	0.0	0.3	0.3	Two coal seams recorded – 12.27m bgl (0.15m overall thickness)
		Bedrock: Sandstone, fakes, pyrite balls, coal & fireclay	0.3	12.6	12.3	
NS77SE193/1 (1971)	5m east	Sandy clay	0.0	0.5	0.5	Limestone – 15.0m bgl (0.2m thickness) Coal – 15.2m bgl (0.2m thickness)
		Bedrock: Sandstone, siltstone, mudstone, limestone, coal & seatrock	0.5	22.9	22.4	
NS77SE193/2 (1971)	5m east	Superficial ("No core")	0.0	3.0	3.0	Limestone – 16.0m bgl (0.3m thickness) Coal – 16.3m bgl (0.15m thickness)
		Bedrock: Sandstone, siltstone, mudstone, limestone, coal & seatclay	3.0	20.7	17.7	

4.3. Mining History

The Mining Remediation Authority interactive maps (Ref [5]), the Groundsure Report [7] and historical maps have been consulted. The site is not within an area of *probable shallow coal mine workings* or a 'Development High Risk Area'.

There are several mineral outcrops located in the wider vicinity of the site as seen in Figure 2-1, together with two mine entries (Adits). Information regarding these mine entries is detailed in Section 4.4 below.

Table 4-2 summarizes details of recorded mining history below.

Table 4-2: Cumbernauld Substation Mining History

Map / Years	Details of Mining History
OS Six Inch 1830s to 1880s	The site is situated in mostly farmland and with some wooded areas. A road and railway line (Caledonian Railway (Castlecary Branch)) can be seen just north of the site, both trending southwest to northeast. There are no notable mining features recorded in close proximity to the site.
OS 25 Inch 1892 - 1914	An <i>Old Quarry</i> is recorded approximately 200m southwest of the site. There are a further two unnamed <i>pits</i> approximately 40m west and 150m southwest.
Geology Six Inch 1900s to 1940s	A <i>Conjectural Outcrop of Castlecary Limestone</i> is seen passing through the southeastern corner of the site. However, this is later documented, according to the BGS 1:10,560 Solid Map, further east of the site, refer to Figure 2-1. Within the <i>Old Quarry</i> , an arrow symbol is shown in a relatively close position as recorded adit (CA Ref. 277674-001), oriented in the same direction. There are three other arrows, directly adjacent to the adit identified previously and two directly north on the railway line. At the <i>Old Quarry</i> the following information is recorded (feet converted into metres): - Gritty sandstone shales 12'-15' (3.7m – 4.6m) - Lenticular limestone band 0-2' (0 – 0.7m) - Coal 4" (0.1m) - Fireclay 2' (0.6m) - Sandstone
OS 1: 25,000 1937-1961	Overhead Lines are recorded bisecting the site, trending generally the same direction as the road to the north.
OS 1:10000 1949-1974	No major changes.
2nd Land Utilisation Survey 1960s-1975	No major changes.
Envirocheck National Grid 1:2500 1969	The Overhead Lines are now only seen starting at the current Cumbernauld Substation site, trending northeast. <i>Old Quarry</i> and <i>pits</i> no longer observed. There are now also two <i>Refuse Tips</i> approximately 100m & 200m south.
Envirocheck National Grid 1:1250 1992	The first set of Overhead Lines are no longer recorded. The existing Cumbernauld substation is now shown as well.
Envirocheck National Grid 2025	No major changes.

4.4. Recorded Mine Entries

A summary of all the closest mine entry locations to the proposed development are provided in the table below.

The sources stated in Section 1.3 have been used to produce a summary of the closest mine entries and are provided in Table 4-3, listed from south to north. In total, 2 have been identified as being within the vicinity of the proposed works.

Following the methodology noted in Section 3, risk from mine entries has been assessed and is shown below with high risk highlighted in red; medium risk highlighted in orange; and low risk highlighted in green. All mine entries with corresponding risk are presented in Figure 4-3.

Table 4-3: Cumbernauld Substation Summary of Recorded Mine Entries

Region	Reference ⁽¹⁾	Name	Entry Type	Adit Angle ° ⁽²⁾	Depth (m)	Treatment Status ⁽³⁾	Distance from Site
Greenyards	277674-001	Greenyards Old Mine	Adit	63	-	Untreated	215m south-southwest
	277674-002	Greenyards Old Mine	Adit	296	-	Untreated	55m west
Notes: (1) Reference number as per Mining Remediation Authority (2) Adit orientation is the azimuth (degrees clockwise from north) (3) Treatment status is as per the Mining Remediation Authority records.							

Based on a review of historical mapping, refer to Section 4.3, adits are likely related to historical quarry and pits. Therefore, it is presumed that the adits were constructed to chase quarry features related to the *Plean No.2 Limestone* outcrop, further discussed in Section 4.8.



Figure 4-3: Cumbernauld Substation Known Mine Entries

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4.5. Recorded Underground Mine Workings

The Consultants Coal Mining Report for the existing Cumbernauld Substation (Ref [6]) has not reported any workings beneath the site or within close proximity. It should be noted that the Consultants Coal Mining Report was focussed on the existing Cumbernauld 132kV Substation together with the likely footprint of the extended substation, however the proposed access road extending from the west of the substation was not included in the search. Hence, adit (277674-002) is approximately 55m away from the proposed access road, but greater than 200m away from the existing substation and therefore was not originally captured in the Consultants Coal Mining Report.

It is understood that the Glencryan Fireclay Mine had workings in the Cumbernauld area, likely related to the Glenboig Lower Fireclay. However, due to the Glencryan fault, circa. 400m south of the site, and that mine entries are recorded south of the fault, the fault likely disrupts the seam extending north beneath the site.

Based on a review of the aforementioned mining information and JWH Ross Mining Report [9] both the *Roman Cement Limestone* and *Castlecary Limestone* outcrop to the east of the site. Both these limestone outcrops were indicated to be mined for fireclay. However, since strata is dipping eastwards, these seams do not exist under the site.

As seen on Figure 2-1, the *Plean No. 2 Limestone* outcrops just west of the site and is suspected beneath the Cumbernauld Substation, although no workings within this seam have been reported beneath the site.

4.6. Coal Mining Abandonment Plan

As stated in the Consultants Coal Mining Report (Ref. [6]), the site falls into abandonment plan catalogue 'OM15189'. Two plans were procured by the Mining Remediation Authority, titled 'OM15189_999999_1OF2' and 'OM15189_999999_1OF2'.

Both plans were reviewed but do not show workings underneath the site. They instead show workings related to the *Glenboig Lower Fireclay* greater than 500m southeast of the site.

Mine abandonment plans are provided in Appendix C.

4.7. Opencast Coal Mining

There are no *Surface Mining (Past and Current)* recorded on the Mining Remediation Authority website (Ref. [5]) within close proximity to the site.

However, as identified on the historical maps, refer to Section 4.3, and the Groundsure Report (Ref. [7]), there was a quarry and two pits recorded southwest of the site, circa 200m. No further information was obtained regarding the quarry. They are, however, at sufficient distances from the development to not influence proposed infrastructure.

4.8. Probable Shallow Workings

Geological bedrock maps, supplied by the British Geological Survey (BGS), as well as the Mining Remediation Website (Ref. [5]) have been consulted to determine whether shallow workings are likely to impact development at the site. The likelihood of such workings, with the probability of impactful shallow workings categorised as unlikely, possible or likely. In this context, shallow workings have been taken to mean less than 30m below rockhead.

Rock dip has been derived from published mapping utilising dip/strike data on the map itself, or has been estimated using positions of outcrops, with known stratigraphic sequences and depths to seams from boreholes / shafts.

The closest outcrop that is suspected beneath the site is the *Plean No. 2 Limestone*, approximately 10m west of the proposed access road, to the west of the substation. Due to the close proximity of the outcrop, it is suspected to be at or just below rockhead at the west of the site beneath the access track. Given the estimated

dip of strata of 4 degrees eastwards, the seam is likely to be up to 16m below rockhead at the eastern most extents of the substation. Refer to Figure 4-4 below for an approximate visualisation of seam positions beneath the site. Beneath the proposed access road and the northwestern edge of the proposed substation, it is likely there will be less than 10T rock cover above the Plean No.2 Limestone, although at the moment of writing this report, no evidence of workings beneath the site exists.

Given the adit locations at outcrop positions and dip direction/amount plunging the seam beneath the site, shallow workings which could impact development in the area are **possible**.

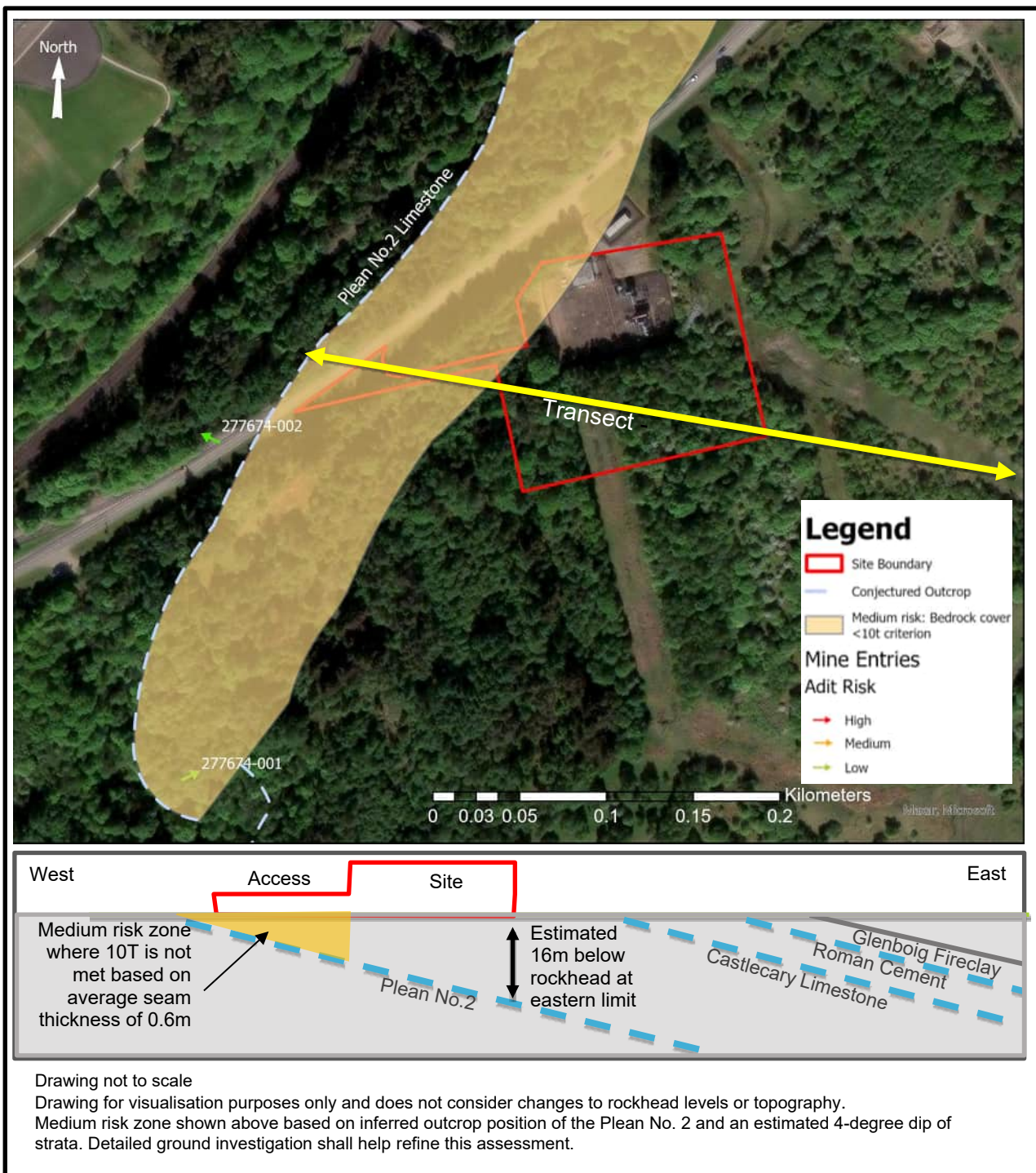


Figure 4-4: Visualisation of mineral seams positions beneath site

4.9. Subsidence

No notices have been given, under Section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence. However, the risk of any subsidence cannot be discounted due to unrecorded workings.

4.10. Mine Gas

No mine gas has been recorded within 500 metres of the enquiry boundary. However, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded and the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases.

Mine gas may be present within workings, voids and mine entries. Any ground investigation targeting mine workings should have continuous wellhead gas monitoring during drilling; and shall use a water-based flush as drilling fluid. Gas monitoring should also be carried out post ground investigation to monitor any fluctuations in gas readings.

4.11. Mine Workings Risk Summary

The purpose of this section is to indicate a risk rating of recorded mine workings that may influence the development of the site. At this stage, further details regarding the proposed development of the site are required to give a more accurate risk rating, such as foundation type and depths.

The risk criterion is based on a Red-Amber-Green (RAG) rating approach outlined in Table 4-4. This is developed based upon the available information for the site, with the assessment methodology of mine workings detailed in Section 3. The risk rating specific to each mine working against the proposed development is summarised as Table 4-5 and recommendations to mitigate risk are discussed in Section 6.

Table 4-4: Mine Workings Risk Classification

Risk Level	
Low	Location of structure is further than 50m of the edge of a recorded mine shaft collapse zone and / or an adit is not in close proximity (<50m) and directed away the structure. No evidence of opencast / surface mining operations. Shallow workings (<30m bgl) are not anticipated.
Medium	Location of structure is in close proximity (<50m) within edge of recorded mine shaft collapse zone and / or an adit is in close proximity and directed towards the structure. Location of structure is in close proximity (<50m) within opencast / surface mining operations. Workings (~30m bgl) are anticipated and / or there is a possibility of shallow workings (<30m bgl) with limited evidence of mine entries in the area.
High	Location of structure is within a recorded mine shaft collapse zone and / or adjacent to an adit. Location of structure is within opencast / surface mining operations with no details on treatment or backfill. Shallow workings (<30m bgl) are anticipated.

Table 4-5: Cumbernauld Substation Summary of Mining Risk

Area	Recorded opencast workings see Section 4.7	Recorded Hazardous Mine Entries see Table 4-3	Recorded Shallow Workings see Section 4.5	Mineral Seam and Anticipated Depth see Section 4.8	Published thickness (m)	10T Criterion satisfied?	Risk Rating
Access Track	None	Adits (277674-001 & 277674-002)	None	Plean No.2 Limestone at or near rockhead	Plean No.2 Limestone – 0.6	No	Medium
Substation		None		Plean No.2 Limestone estimated 6 to 16m brh		Yes	Low
Notes: 1. brh = below rockhead 2. For explanation of the 10T criterion, refer to Section 3.4 3. Thicknesses have been derived from published stratigraphic column and typical seam thicknesses. 4. All depths provided are approximate and have been estimated based on available data. A ground investigation is recommended to confirm depths and thicknesses of mineral seams and/or workings in close proximity to the site. 5. For further risk reduction recommendations, refer to Section 5							

5. Risk Assessment

The purpose of this section is to discuss site general mining hazards which may affect the development of the site and the proposed mitigation measures. At this stage, further details regarding the proposed development of the site are required to inform the assigned risk and mitigation measures, and exact locations are subject to change.

This risk register is developed based upon the available information for the site and typical hazards in Abandoned Mine Workings Manual (Ref [11]).

From the tables below, it is possible to provide a quantitative figure for the various mining risks for the site using the equation:

$$\text{Risk (R)} = \text{Likelihood (L)} \times \text{Severity (S)}$$

Table 5-1: Risk rating matrix

Likelihood		Severity				
		1	2	3	4	5
		Very low	Low	Medium	High	Very High
1	Extremely Unlikely	1	2	3	4	5
2	Unlikely	2	4	6	8	10
3	Likely	3	6	9	12	15
4	Extremely Likely	4	8	12	16	20
5	Almost Certain	5	10	15	20	25

Table 5-2: Severity Definitions

Potential Severity of Harm Occurring		
Severity	During Construction	Permanent & Post Construction
1 Very Low	Minor injury, minor environmental incident with no legislative breach	-
2 Low	Lost time injury, no legislative breach	-
3 Medium	Reportable injury / dangerous occurrence, potential for lost time / complaints for legislative breach	-
4 High	Major injury, minor legislative breach with potential for prosecution	Damage to substation infrastructure, excessive settlement, damage to access roads
5 Very High	Fatality, potential for major environmental incident with high clean-up or prosecution costs	Collapse of substation infrastructure failure of network, collapse of access track into void

Table 5-3: Risk Classification

Risk Level	
Low (1 – 8)	Ensure assumed control measures are maintained and reviewed as necessary
Medium (9 – 19)	Additional control measures needed to reduce risk rating to a level that is equivalent to a test of “reasonably required” for.
High (20 – 25)	Activity not permitted. Hazard to be avoided or risk to be reduced to a tolerable level.

Table 5-4: Cumbernauld Substation Mining Risk Register

Hazard	Risk Level before Mitigations			Consequence	Mitigations	Residual Risk		
	Likelihood	Severity	Risk			Likelihood	Severity	Risk
Mine entries (adits and shaft)	3	5	15	- Health and safety issues for construction personnel on site (particularly for unidentified mine entries). - Ground instability in the cone of collapse area surrounding mine entries (Section 3.2). - Design failure and collapse of towers / access roads / substation infrastructure (ULS and SLS) due to proximity to mine entries. - Increased cost and programme length if unexpected mine entries encountered. - Possibility of mine entry treatment required = increased cost.	- Detailed mining risk assessment undertaken to understand locations and characteristics of mine entries. - Undertake ground investigation to accurately locate mine entries, and to understand rockhead levels. Contractor to obtain a permit from the Mining Remediation Authority prior to GI. - Once mine entries have been located, the implementation of a buffer zone around mine entries where possible to ensure health and safety of personnel on site, and/or micro-siting of proposed infrastructure and access tracks away from mine entries. - If micro-siting is not an option, stabilization methods to be explored if deemed necessary. - Site personnel briefed on mine entries risk through tool-box talks and RAMS.	2	5	10
Shallow workings and void migration	3	5	15	- Surface instability/ subsidence during or post construction. - Design failure (ULS and SLS). - Health & safety issues for construction personnel due. - Construction delays and added costs, - Possibility of treatment of workings required = increased cost/programme.	- Undertake ground investigation (GI) to prove / disprove workings. GI will also prove depth to rockhead, competency of rock, and depth of any coal seams. Contractor to obtain a permit from the Mining Remediation Authority prior to GI. - Detailed mining risk assessment undertaken to understand locations and depths of shallow workings. - Micro-siting of infrastructure / track locations to be considered. - Stabilization methods to be deployed if deemed necessary. - Site personnel briefed on mine workings risk through tool-box talks and RAMS.	2	5	10
Past surface mine or opencast workings	1	5	5	- Design failure (ULS and SLS). - Possible backfill or surface mining waste deposited across areas of surface mining without adequate compaction, and with range of constituents = lower strengths, contamination, high compressibility. - Health & safety concerns of construction personnel both acute and chronic, - Construction delays and added costs.	- Undertake ground investigation to investigate sites local ground conditions. Contractor to obtain a permit from the Mining Remediation Authority prior to GI. - Geo-environmental assessments and testing undertaken on any backfilled material. - Detailed mining risk assessment undertaken to understand locations of surface workings. - Robust design in place if constructed adjacent slopes, including slope stability assessments.	1	5	5
Mine gas	3	4	12	- Health and safety issues related to mine gas, both acute and chronic. - Increased fire and explosion risk during GI or construction if mine gas present. - Environmental impacts on surrounding flora, fauna and local water resources. - Mine gas migration if construction or grouting activities undertaken within voided space = health and safety issues of surrounding buildings.	- Undertake ground investigation with gas/groundwater monitoring wells to allow for monitoring of gas concentrations. - Continuous well-head gas monitoring during drilling or piling. - Water based flush used during drilling. - Site personnel briefed on mine gas risk through tool-box talks and RAMS. Provision of mine gas information and PPE to personnel if deemed necessary. - Development of contingency plans for the release of mine gas on site to ensure construction workers health and safety. - Contractors to follow guidance set out in Coal Authority Guidance – <i>Managing Risk of Hazardous Gases When Drilling or Piling Near Coal</i> (2019) [Ref [13]	2	3	6

Contamination from Mining Activity (Mining Waste / Acid Mine Drainage)	3	3	9	- Health and safety issues related to exposure of contaminated ground. - Disturbance of contaminated ground through construction activities could activate contaminants in the environment - impacts on surrounding flora, fauna and local water resources. - Construction activities could also create new pathways for contamination.	- Ground investigation to be undertaken with geo-environmental testing. - Geo-environmental assessments of the site. - If assessments and RAMS require it, provision suitable equipment and PPE for site personnel.	2	3	6
Spontaneous Combustion of colliery Made Ground / Stockpiles	2	5	10	- Health and safety concerns for site personnel and public. - Damage to infrastructure. - Environmental damage - Explosion risk	- Robust review of desk study materials identifying likely locations of colliery spoil. - Ground investigation to understand composition of any made ground material, including loss on ignition testing. - If colliery spoil is identified then risk shall be appropriately considered in site RAMS, e.g. no naked flames in set areas. - Excavation of colliery spoil an option if required.	1	5	5

6. Conclusions and Recommendations

6.1. Conclusion

As per the summary mining risk, refer to Table 4-5, the site has been identified as a medium risk and may be subject to the hazards identified in the risk register in the previous section (Table 5-4). The mitigations in the above table are further discussed below as further recommendations in order of preferred solution.

6.2. Further recommendations

1. GROUND INVESTIGATIONS

Ground investigation (GI) is one of the primary risk reducing recommendations for mining risk along the site. A Ground Investigation Specification (document reference: 30004787-BHK-XX-XX-SP-GE-00002) [Ref [14]] was issued in July 2025 to allow the investigation of ground conditions at the proposed site. The main objectives of this GI are to understand the ground conditions; to monitor the ground gas/groundwater regime; to prove or disprove the existence of mining; and to obtain samples for laboratory testing.

The primary methods specifically for mining risk reduction will be to undertake boreholes using dual-purpose dynamic sampling with rotary core follow-on which will be sunk into bedrock to examine any mineral seams (and/or workings) within influencing depth to the scheme. A number of boreholes are specifically proposed to investigate the aforementioned *Plean No.2 Limestone* band, whilst other boreholes shall help characterise the rock with varying depths of rock coring to assist in the wider design.

The GI shall help mitigate mining risk at the current proposed sites. The mining risks concluded from this assessment shall be revisited following the ground investigation.

Although risk can be reduced through GI, mining risk cannot be fully discounted. An intact mineral seam encountered within boreholes may be simply an unworked portion of coal or mineral (stoop or pillar), however it would offer information as to the depth/thickness of mineral seams which in turn can reinforce the conclusions in previous sections as to likely depth of potential workings.

2A. TREATMENT OF SHALLOW UNDERGROUND WORKINGS

If ground investigation uncovers untreated shallow mine workings beneath the site, and they are within influencing depth i.e. the "10T" criterion is not satisfied or poor quality rock cover, void grouting should be explored. This will require a bespoke mining consolidation specification and engagement with an appropriately experienced and competent grouting contractor.

Mine grouting can be carbon intensive, expensive, and will likely delay project programme, and therefore alternatives such as proposed infrastructure re-positioning should be explored.

2B. TREATMENT OF MINE ENTRIES

No known mine shafts exist at the site, however two mine adits exist to the west beyond the site extents. If evidence of mine workings is observed, a geophysical survey may be necessary to detect the possibility of unrecorded shafts or shallow workings and to prove exact locations of recorded mine entries in the vicinity of the proposed site.

If mine entries are encountered within influencing distance of the development, treatment of mine entries shall be explored and will form part of the mining consolidation specification. Typical options for mine entry treatment including backfilling the shaft or adit with a chemically stable material agreed with the designer. The mine entry shall be sealed with a plug or cap, often using reinforced concrete. A suitable design should be in place in agreement between the contractor and designer.

3. FOUNDATION DESIGN WITHIN AREAS OF PAST MINING

Following the ground investigation and interpretation, detailed design of foundations shall be undertaken. In areas of past shallow workings and surface workings, there is the potential for made ground deposits formed from mining waste. This will likely be heterogenous with varying characteristics and possible contamination. Ground investigation shall help categorise these materials, if present, however made ground is characteristically variable, and as such a robust design should be in place if constructing within these areas.

The foundation solution shall take cognisance of the ground conditions and presence/absence of historic mining. At the time of writing this report, proposed foundation types are still to be confirmed.

4. MINE GAS

The ground investigation shall explore and monitor the presence of mine gases during the fieldwork and post fieldwork for a set duration. The monitoring shall identify if elevated concentrations of known mine gases are present.

Both borehole drilling and piling operations have the potential to spark causing ignition if in contact with mine gases. Techniques should be utilised to minimise this risk, such as using water-based flush during drilling or piling. Well head gas monitoring should be utilised on all borehole / piling plant.

There is the additional risk of mine gas migration if treatment of mine workings is required. Grouting of voided space with gas present can cause migration of gases and can in some instances force gases into basements of surrounding buildings. Although the development is largely in an undeveloped area, this should be investigated further if mine grouting is required.

7. References

- [1] BakerHicks Ltd., "DWNO – WB Route, XX Tie-in & AA UGC Mining Risk Assessment 30004787-BHK-XX-XX-RP-GE-00002," May 2025.
- [2] British Geological Survey, "NS77SE 1:10560 Solid Geology Map," BGS, 1988.
- [3] British Geological Survey, "NS77SE 1:10560 Drift Geology Map," BGS, 1990.
- [4] British Geological Survey, "Geoindex Onshore," [Online]. Available: <https://mapapps2.bgs.ac.uk/geoindex>.
- [5] Mining Remediation Authority, "Mining Remediation Authority Interactive Map," [Online]. Available: <https://datamine-cauk.hub.arcgis.com/>. [Accessed August 2025].
- [6] Mining Remediation Authority, "Consultants Coal Mining Report Cumbernauld GS-JDM-CUH-I7F-CGD," Mining Remediation Authority, May 2025.
- [7] Groundsure, "Groundsure Report - GS-VN1-A5T-7OP-LHW," 2025.
- [8] Scotsoil Survey Limited, "Site Investigation Report - Cumbernauld 132kV Substation," 1966.
- [9] JWH Ross & Company, "Report relative to the mineral position under and adjacent to an area at Cumbernauld upon which it is proposed erecting a 132kV Substation," September 1963.
- [10] I. B. Cameron, A. M. Aitken, M. A. E. Browne and D. Stephenson, "Geology of the Falkirk district Memoir for 1:50 000 geological sheet 31E (Scotland)," 1998. [Online]. Available: <https://webapps.bgs.ac.uk/memoirs/docs/B01881.html>. [Accessed August 2025].
- [11] CIRIA, C758D Abandoned mine workings manual, London, 2019.
- [12] SEPA, "SEPA flood maps," April 2025. [Online]. Available: <https://scottishepa.maps.arcgis.com/apps/webappviewer/index.html>.
- [13] The Coal Authority, "Guidance on managing the risk of hazardous gases when drilling or piling near coal," Coal Authority, 2019.
- [14] BakerHicks, "Ground Investigation Specification - DWNO Cumbernauld 275kV Substation P03," BakerHicks, Motherwell, July 2025.
- [15] Open Street Map, "Open Street Map," April 2025. [Online]. Available: <https://www.openstreetmap.org/#map=5/54.91/-3.43>.

Appendix A. Consultants Coal Mining Report



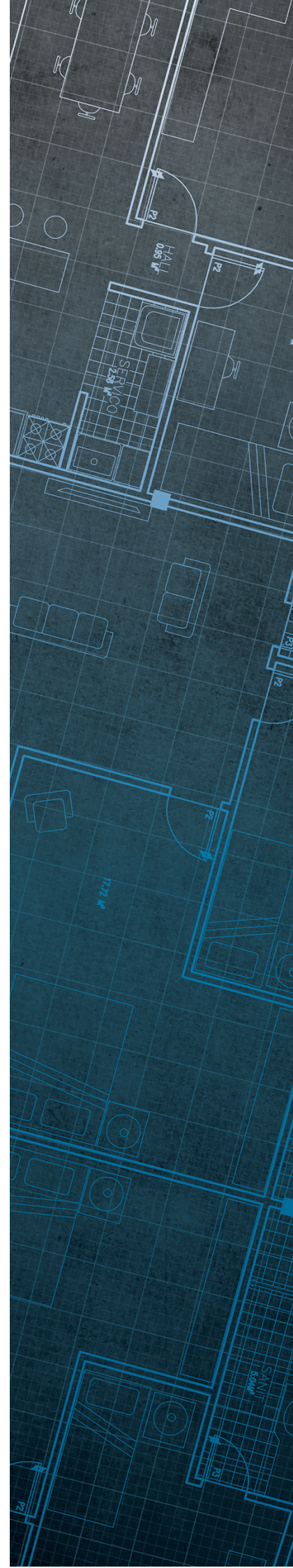
The Coal
Authority

Consultants Coal Mining Report

Cumbernauld
North Lanarkshire

Date of enquiry: 9 May 2025
Date enquiry received: 9 May 2025
Issue date: 9 May 2025

Our reference: 51003497303001
Your reference: GS-JDM-CUH-I7F-CGD



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

Cumbernauld
North Lanarkshire

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

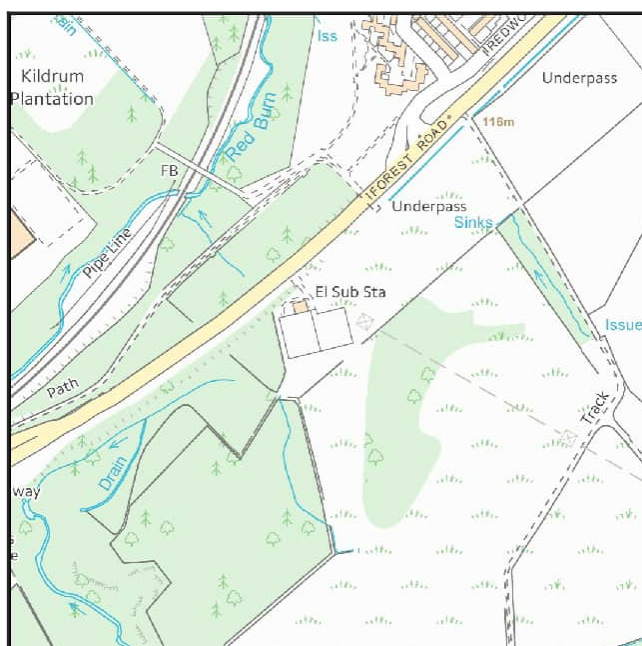
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

No past mining recorded.

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

OM15189		
---------	--	--

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
PLEAN NO2 LIMESTONE	Limestone	Yes	41.8	North-West	42

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

Distance to site investigation (m)	Direction
Within	N/A

See Section 4 for further information.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

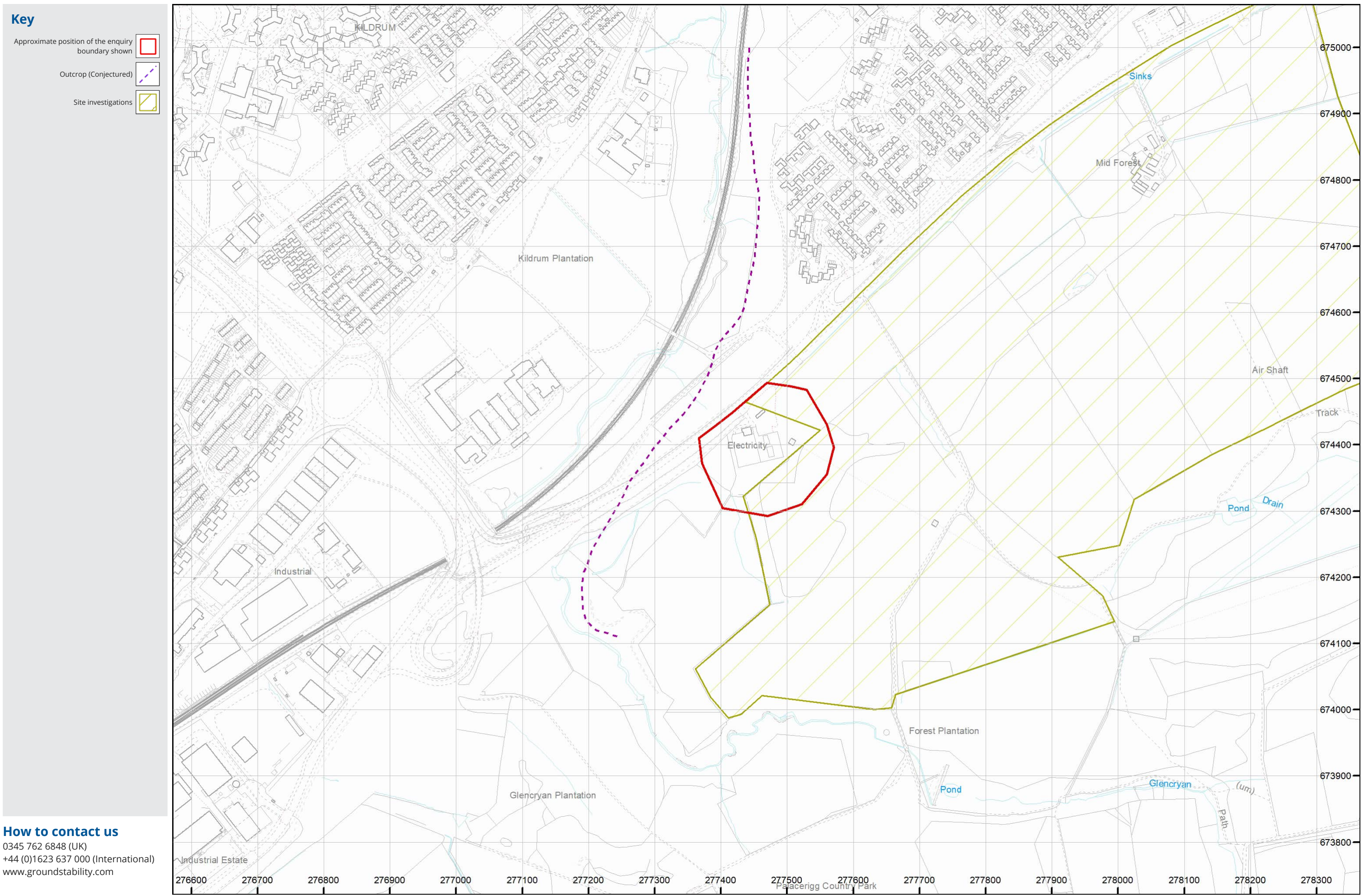
Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

The map highlights any specific surface or subsurface features within or near to the boundary of the site.



Appendix B. Scotsoil Cumbernauld 132kV Substation Site Investigation Report

W. N. Davidson
Engineer in Charge
Drawing Office

Civic Design Section
Transmission / Distribution
9th March 1966

CUMBERNAULD 132 kV Substation

I forward herewith for your attention a copy of the Site Investigation Report for the above substation site.

Particular attention is drawn to the following notes which should be added to the excavation drawings:—

1. Pear, where it occurs in the area of the initial development, should be completely removed.
2. A "cut off" drain to be provided round the area to be developed.
3. Excavation work to commence at the lower end of site.

SITE INVESTIGATION REPORT

CUMBERNAULD 132 kV SUBSTATION

South of Scotland Electricity Board,
Cathcart House,
Inverlair Avenue,
GLASGOW, S.4.

SCOTSOIL SURVEYS LIMITED
National Bank Buildings
Bathgate

21st February, 1966

INTRODUCTION:

The investigation was carried out in accordance with the Contract awarded by the South of Scotland Electricity Board, to George Nicholson & Co. (Mineral Borers) Ltd., (in association with their subsidiary company Scotsoil Surveys Limited).

The objects of the investigation were: To explore the strata underlying the site of the proposed new 132 kV substation at Forrest Road, Cumbernauld, to assess the suitability of the site for the proposed development, to foresee and provide against difficulties which might arise during construction due to ground conditions and to provide the information necessary to enable an adequate and economical foundation design to be made.

DOCUMENTS INCLUDED IN THE REPORT:

1. Borehole record sheets incorporating:-
 - Details of sampling.
 - Standard penetration test results.
 - Natural moisture content test results.
 - Natural bulk density test results.
 - Unconfined compression test results.
 - Recommended allowable bearing capacities.
2. Trial pit record sheets.
3. Drawing No. 1025/1 - Arrangement of boreholes.

EXTENT OF INVESTIGATION:

The boreholes were sunk in the positions selected by the Engineer and shown in Drawing No. 1025/1. Subsequently trial pits were sunk in the positions shown in Drawing No. 1025/1, to enable an examination to be made of the decomposed sandstone. For numbers of boreholes, trial pits, samples, tests, etc. see Table "A".

METHODS OF BORING, SAMPLING AND TESTING:

The/

The site work was carried out in accordance with British Standard Code of Practice C.P. 2,001 (1957) Site Investigations.

The laboratory tests carried out were, where appropriate, in accordance with British Standard 1,377 (methods of testing for soil classification and compaction).

DISCUSSION OF RESULTS:

In every part of the site, decomposed sandstone overlying hard sandstone occurs at no great depth below existing ground level. In some areas, notably near boreholes Nos. 2 and 8, a comparatively thick layer of surface material overlies the rock. Peat occurs at each of these locations to some depth and very soft clay thereafter. The soft and very soft sandstone overlying the hard rock appeared, on the basis of the information obtained from the boreholes, to be good load bearing materials. The trial pits were opened to confirm this. In fact these materials are entirely satisfactory for the purpose of supporting the foundations, although the load bearing properties of the very soft rock vary from place to place.

The ground water levels are comparatively high and water flows through the peat.

The results of the standard penetration tests indicate the fact that even the very soft rock is capable of sustaining moderate applied loads, whilst the soft rock will, on the basis of these results be capable of sustaining comparatively high loads.

The results of the natural moisture content, natural bulk density and unconfined compression tests carried out on/

on the soft clays are of the order to be expected for materials of the types tested.

RECOMMENDATIONS:

In this section of the report recommendations are made as to the allowable bearing capacities of the various materials underlying the site. These figures are quoted also in the borehole record sheets and, for information regarding allowable bearing capacity at any particular position, reference should be made to these sheets.

The recommendations made in the report are based solely upon the properties of the surface deposits underlying the site. No attempt has been made to establish the existence or otherwise of mineral workings under the area.

In view of the facts that soft rock occurs near the surface in almost every part of the site and where it is at some depth peat overlies it, we are of the opinion that all foundations should be carried to this level. This will involve excavations to depths of 6'0" to 9'0" at the locations of boreholes Nos. 2 and 8, if buildings are to be located there. Examination of the very soft and soft sandstone revealed in the trial pits indicates that these are capable of providing a satisfactory foundation.

It is evident, after consideration of the borehole and trial pit record sheets, that some difficulty will be experienced on account of the flow of water over the rock. We would recommend that surface drainage, particularly a cut off drain around the south-east end of the site, should be provided prior to commencement of levelling and foundation works./

works. All excavations should be commenced at the lower end of the site so that water should have an opportunity to drain readily, otherwise the very soft sandstone may deteriorate under the actions of water and movements of plant and personnel over it.

Provided that the precautions mentioned in the preceeding paragraph are observed, the very soft decomposed sandstone is capable of sustaining an applied load of the order of 2.0 tons per square foot, whilst the soft sandstone can carry loads of up to 5.0 tons per square foot. Loads of a higher order than this may be carried upon the hard rock which is capable of carrying loads up to the order of at least 10.0 tons per square foot.

It may be necessary to excavate a proportion of very soft sandstone in order that foundations to individual units may be carried upon a uniform formation. It should be possible to excavate this material by normal soft excavation methods and blasting should only be necessary where hard rock is to be removed.

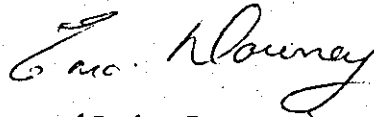
It must be emphasised that recommendations regarding the allowable bearing capacities of the rocks are made on the basis of inspection of these materials in the trial pits and experience of similar materials in other locations. No tests were carried out upon the rock since no rock cores were extracted. It is our view that the extraction of rock cores, a comparatively costly procedure, is unnecessary in the present situation since even comparatively heavy loads may be carried upon the rock occuring near existing ground level.

Although the boreholes reveal that materials underlying the site are comparatively consistent throughout the area, it/

it is essential that an examination is made of the formation for foundations in every part of the site to ensure that if materials differing from those described in the report do occur, these are detected and the foundation design is modified accordingly.

At the sulphate contents recorded, no corrosion will be caused to concrete or other building materials.

For and on behalf of SCOTSOIL SURVEYS LIMITED,

A handwritten signature in cursive script, appearing to read "Eric Downey".

(Eric Downey)
Director.

CUMBERNAULD 132 kV SUBSTATION

TABLE A

EXTENT OF INVESTIGATION

No. of Boreholes.	No. of Trial Pits.	Disturbed Samples.	Undisturbed Samples 1½" Dia.	Standard Penetration Tests.	Natural Moisture Content Tests.	Natural Bulk Density Tests.	Unconfined Compression Tests.
12	4	18	3	12	3	3	3

BOREHOLE RECORD SHEET

LOCATION : Cumbernauld 132kV Substation.
 JOB NO. : 1025 BOREHOLE NO. 1
 SURFACE LEVEL : 114.71 O.D. DIAMETER : 3"

WATER LEVELS : 3'4" INITIAL : 3'4" FINAL
 DATE COMMENCED : 20 - 1 - 66
 DATE COMPLETED : 20 - 1 - 66

MAP REF.

E						
N						

DESCRIPTION	Leg.	Group Symbol	Depth	Thick-ness	O.D.	Samples	n (blows)	w (%)	γ (lb./cu. ft.)	qu (lb./sq. ft.)	c (lb./cu. ft.)	φ (deg.)	L.L. (%)	P.L. (%)	P.I. (%)	INDICATED/RECOM-MENDED ALLOWABLE BEARING CAPACITY (Tons/sq. ft.)	
																Strip	Spread
Peaty Topsoil.			1 6	1 6	113.21	U1 12'0" D 6'0" D 10'0"											
Soft Intact Brown Very Sandy Clay with Patches of Sand.			3 6	2 0	111.21			20.0	140	760						-	-
Very Soft Decomposed Rock (Sandstone) *			5 6	2 0	109.21											2.0	2.0
Soft Decomposed Rock with thin Layers of Hard Rock (Sandstone) *			8 6	3 0	106.21											5.0	5.0
Hard Rock (Sandstone)			13 6	5 0	101.21											10.0	10.0

REMARKS: * This material resembles a slightly cemented sand with fragments of Soft Sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density qu - Unconfined compressive strength c - Apparent cohesion φ - Angle of Internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION Cumbernauld 132kV Substation.
JOB NO. 1025 BOREHOLE NO. 2
SURFACE LEVEL: 108.92 O.D. DIAMETER: 3"

WATER LEVELS: 5'6" INITIAL: 5'6" FINAL
DATE COMMENCED: 20 - 1 - 66
DATE COMPLETED: 20 - 1 - 66

MAP REF.	E					
	N					

DESCRIPTION	Leg.	Group Symbol	Depth	Thick-ness	O.D.	Samples	n (blows)	w (%)	γ (lb./cu. ft.)	qu (lb./sq. ft.)	c (lb./cu. ft.)	φ (deg.)	L.L. (%)	P.L. (%)	P.I. (%)	INDICATED/RECOM-MENDED ALLOWABLE BEARING CAPACITY (Tons/sq. ft.)	
																Strip	Spread
eat.				6 6												-	-
Very Soft to Soft Intact Grey Sandy Clay.			6 6		102.42	D	2									-	-
Very Soft Decomposed Rock (Sandstone) *			8 6	2 0	100.42	D	7'6"										
Soft Decomposed Rock (Sandstone) *			9 6	1 0	99.42	D	40									2.0	2.0
Hard Rock (Sandstone).			10 6	1 0	98.42	D	10'0"									5.0	5.0
			15 6	5 0	93.42											10.0	10.0

REMARKS: * Penetration tests at 10'0" - 40 blows taken for 8" penetration.
* This material resembles a slightly cemented sand with fragments of Soft Sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density qu - Unconfined compressive strength c - Apparent cohesion φ - Angle of internal friction
L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION: Cumbernauld 132kV Substation.
 JOB NO. 1025 BOREHOLE NO. 3
 SURFACE LEVEL 107.46 O.D. DIAMETER: 3"

WATER LEVELS: 2'10" INITIAL: 2'10" FINAL
 DATE COMMENCED: 20 - 1 - 66
 DATE COMPLETED: 20 - 1 - 66

MAP REF.

E							
N							

DESCRIPTION	Leg.	Group Symbol	Depth	Thick-ness	O.D.	Samples	n (blows)	w (%)	γ (lb./cu. ft.)	qu (lb./sq. ft.)	c (lb./cu. ft.)	φ (deg.)	L.L. (%)	P.L. (%)	P.I. (%)	INDICATED/RECOM-MENDED ALLOWABLE BEARING CAPACITY (Tons/sq. ft.)	
																Strip	Spread
Peat.			2 0	2 0	105.46											-	-
Very Soft Decomposed Rock (Sandstone)⌘			6 0	4 0	101.46	D 3'0"	2 3'6"									2.0	2.0
Hard Rock (Sandstone).			11 0	5 0	96.46											10.0	10.0

REMARKS: ⌘ This material resembles a slightly cemented sand with fragments of soft sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density qu - Unconfined compressive strength c - Apparent cohesion φ - Angle of internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION : Cumbernauld 132kV Substation.
JOB NO. : 1025 BOREHOLE NO. 4
SURFACE LEVEL : 120.37 O.D. DIAMETER: 3"

WATER LEVELS: DRY INITIAL: DRY FINAL
DATE COMMENCED: 21 - 1 - 66
DATE COMPLETED: 21 - 1 - 66

MAP REF.	E					
	N					

DESCRIPTION	Leg.	Group Symbol	Depth	Thick-ness	O.D.	Samples	n (blows)	w (%)	γ (lb./cu. ft.)	qu (lb./sq. ft.)	c (lb./cu. ft.)	φ (deg.)	L.L. (%)	P.L. (%)	P.I. (%)	INDICATED/RECOM-MENDED ALLOWABLE BEARING CAPACITY (Tons/sq. ft.)	
																Strip	Spread
Ton soil.			0 9	0 9	119.62												
Broken and Decomposed Rock (Sandstone) *			3 0	2 3	117.37		15									2.0	2.0
Very Soft Rock (Sandstone)			4 0	1 0	116.37		3'0"									2.0	2.0
Hard Rock (Sandstone).				5 0		D										10.0	10.0
			9 0		111.37	5'0"											

REMARKS: * This material resembles a slightly cemented sand with fragments of Soft Sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density qu - Unconfined compressive strength c - Apparent cohesion φ - Angle of internal friction
L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION : Cumbernauld 132kV Substation. WATER LEVELS: DRY INITIAL: DRY FINAL

JOB NO. : 1025 BOREHOLE NO. 5 DATE COMMENCED: 21 - 1 - 66

SURFACE LEVEL: 114.36 O.D. DIAMETER: 3" DATE COMPLETED: 21 - 1 - 66

MAP REF.

E						
N						

[illegible]

REMARKS: x Penetration test at 3'0" - 38 blows taken for 7" penetration.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion ϕ - Angle of internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION : Cumbernauld 132kV Substation. WATER LEVELS: 2'8" INITIAL: 2'8" FINAL
 JOB NO. : 1025 BOREHOLE NO. 6 DATE COMMENCED: 21 - 1 - 66
 SURFACE LEVEL: 107.82 O.D. DIAMETER: 3" DATE COMPLETED: 21 - 1 - 66

MAP REF.

E							
N							

DESCRIPTION	Leg.	Group Symbol	Depth	Thick-ness	O.D.	Samples	n (blows)	w (%)	γ (lb./cu. ft.)	q _u (lb./sq. ft.)	c (lb./cu. ft.)	φ (deg.)	L.L. (%)	P.L. (%)	P.I. (%)	INDICATED/RECOM-MENDED ALLOWABLE BEARING CAPACITY (Tons/sq. ft.)	
																Strip	Spread
Peaty Topsoil.			1 9	1 9	106.07											-	-
Peat.			4 8	2 11	103.15											-	-
Very Soft Decomposed and Broken Rock (Sandstone) x			8 9	4 1	99.07	D 6'0"	5 6'0"									2.0	2.0
Hard Rock (Sandstone)			13 9	5 0	94.07	D 10'0"										10.0	10.0

REMARKS:

This material resembles a slightly cemented sand with fragments of soft sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion φ - Angle of internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION Cumbernauld 132kV Substation.....

JOB NO. 1025 BOREHOLE NO. 7

SURFACE LEVEL: 105.68 O.D. DIAMETER: 3"

WATER LEVELS:..... DRY INITIAL :..... DRY FINAL

DATE COMMENCED: 20 - 1 - 66

DATE COMPLETED: 20 - 1 - 66

MAP REF.

E						
N						

[illegible]

REMARKS: This material resembles a slightly cemented sand with fragments o soft sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion ϕ - Angle of internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION : Cumbernauld 132kV Substation
 JOB NO. : 1025 BOREHOLE NO. 8
 SURFACE LEVEL: 107.42 O.D. DIAMETER: 3"

WATER LEVELS: 4'6" INITIAL: 4'6" FINAL
 DATE COMMENCED: 24 - 1 - 66
 DATE COMPLETED: 24 - 1 - 66

MAP REF.

E						
N						

DESCRIPTION	Leg.	Group Symbol	Depth	Thick-ness	O.D.	Samples	n (blows)	w (%)	γ (lb./cu. ft.)	q _u (lb./sq. ft.)	c (lb./cu. ft.)	φ (deg.)	L.L. (%)	P.L. (%)	P.I. (%)	INDICATED/RECOM-MENDED ALLOWABLE BEARING CAPACITY (Tons/sq. ft.)	
																Strip	Spread
Filling:- Broken Sandstone.			1 9	1 9	105.67											-	-
Peat.			4 6	2 9	102.92	D	1									-	-
Very Soft Intact Brown Sandy Clay with Slight traces of Peat.			6 0	1 6	101.42	4'6"	5'0"									-	-
Very Soft Decomposed Rock (Sandstone)*			8 3	2 3	99.17		2									2.0	2.0
Hard Rock with Thin Layers of Soft Rock (Sandstone).			13 3	5 0	94.17	D	10'0"									10.0	10.0

REMARKS: * This material resembles a slightly cemented sand with fragments of Soft Sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion φ - Angle of internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

WATER LEVELS: 5'0" INITIAL: 5'0" FINAL

DATE COMMENCED: 21 - 1 - 66

DATE COMPLETED: 24 - 1-- 66

E						
N						

[illegible]

REMARKS: ✕ This material resembles a slightly cemented sand with fragments of Soft Sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion ϕ - Angle of internal friction
 $L.L.$ - Liquid Limit $P.L.$ - Plastic Limit $P.I.$ - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION : Cumbernauld 132kV Substation.

WATER LEVELS: DRY INITIAL: DRY FINAL

JOB NO. 1025 BOREHOLE NO. 10

DATE COMMENCED: 21 - 1 - 66

SURFACE LEVEL: 117.11 O.D. DIAMETER: 3"

DATE COMPLETED: 21 - 1 - 66

MAP REF.

E						
N						

[illegible]

REMARKS: * This material resembles a slightly cemented Sand with Fragments of Soft Sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion ϕ - Angle of internal friction
L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION: Cumbernauld 132kV Substation.
 JOB NO.: 1025 BOREHOLE NO.: 11
 SURFACE LEVEL: 114.71 DIAMETER: 3"

WATER LEVELS: DRY INITIAL: DRY FINAL
 DATE COMMENCED: 24 - 1 - 66
 DATE COMPLETED: 24 - 1 - 66

MAP REF.

E							
N							

DESCRIPTION	Leg.	Group Symbol	Depth	Thick-ness	O.D.	Samples	n (blows)	w (%)	γ (lb./cu. ft.)	q _u (lb./sq. ft.)	c (lb./cu. ft.)	φ (deg.)	L.L. (%)	P.L. (%)	P.I. (%)	INDICATED/RECOM-MENDED ALLOWABLE BEARING CAPACITY (Tons/sq. ft.)	
																Strip	Spread
Filling:- Broken Sandstone.	⊗		1 3	1 3	113.46	U1 1/2										-	-
Filling:- Firm Dark Brown Sandy Clay.	⊗		2 3	1 0	112.46			32.8	122	2830						-	-
Firm Intact Mottled Brown Sandy Clay.	⊗		4 0	1 9	110.71	D 6' 0"										1.0	1.25
Soft Decomposed Rock (Sandstone)	⊗		5 0	1 0	109.71											5.0	5.0
Hard Rock with Thin Layers of Soft Rock (Sandstone).	⊗		10 0	5 0	104.71											10.0	10.0

REMARKS: * This material resembles a slightly cemented Sand with Fragments of Soft Sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion φ - Angle of internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

BOREHOLE RECORD SHEET

LOCATION : Cumbernauld 132kV Substation
 JOB NO. : 1025 BOREHOLE NO. 12
 SURFACE LEVEL: 123.61 DIAMETER: 3"

WATER LEVELS: DRY INITIAL: DRY FINAL
 DATE COMMENCED: 24 - 1 - 66
 DATE COMPLETED: 24 - 1 - 66

MAP REF.

E						
N						

DESCRIPTION	Leg.	Group Symbol	Depth	Thick-ness	Level	Samples	n (blows)	w (%)	s (lb./cu. ft.)	q _u (lb./sq. ft.)	c (lb./sq. ft.)	φ (deg.)	L.L. (%)	P.L. (%)	P.I. (%)	INDICATED/RECOM-MENDED ALLOWABLE BEARING CAPACITY (Tons/sq. ft.)	
																Strip	Spread
Topsoil.			0 9	0 9	122.86											-	-
Filling:- Firm Dark Brown Sandy Clay.			1 6	0 9	122.11	U1 1'0"		32.7	119	3840						1.0	1.25
Firm Intact Greyish Sandy Clay.			4 6	3 0	119.11											1.0	1.25
Very Soft Decomposed Rock (Sandstone) *			6 0	1 6	117.61	D 5'0"	5									2.0	2.0
Hard Rock with Thin Layers of Soft Rock.				5 0		6'0"										10.0	10.0
			11 0		112.61												

REMARKS: * This material resembles a slightly cemented sand with fragments of soft sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content s - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion φ - Angle of internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index U.4 - 4" Dia. Undisturbed Sample U.1 1/2 - 1 1/2" Dia. Undisturbed Sample D - Disturbed Sample B - Bulk Sample

BOREHOLE

LOCATION Trial Pit
JOB NO. 1025 ~~BOREHOLE NO.~~ A

SURFACE LEVEL:..... DIAMETER:.....

DATE COMMENCED: 3-2-66

DATE COMPLETED: 4-2-66

E						
N						

[illegible]

REMARKS: * This material resembles a slightly cemented sand with fragments of soft sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index

U.4 - 4" Dia. Undisturbed Sample

 ρ - Natural bulk density

q_u - Unconfined compressive strength

c - Apparent cohesion
B - Bulk Sample

ϕ - Angle of internal friction

TRIAL PIT
BOREHOLE RECORD SHEET

LOCATION : Cumbernauld 132 kV Substation WATER LEVELS:..... INITIAL :..... FINAL.....
JOB NO. : 1025 Trial Pit B DATE COMMENCED: 3-2-66
SURFACE LEVEL:..... DIAMETER:..... DATE COMPLETED: 4-2-66

MAP REF.

E						
N						

[illegible]

REMARKS: * This material resembles a slightly cemented sand with fragments of soft sandstone,

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion ϕ - Angle of internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index U.4 - 4" Dia. Undisturbed Sample U.1½ - 1½" Dia. Undisturbed Sample D - Disturbed Sample B - Bulk Sample

BOREHOLE RECORD SHEET

LOCATION: Cumbernauld 132 kV Substation

LOCATION Trial Pit
JOB NO. 1025 BOREHOLE NO. C

SURFACE LEVEL:..... DIAMETER:.....

WATER LEVELS:.....INITIAL :.....FINAL

DATE COMMENCED: 3-2-66

DATE COMPLETED: 4-2-66

MAP REF.

E						
N						

[illegible]

REMARKS:

SYMBOLS: n - No. of blows per foot in standard penetration test
 LL - Liquid Limit PL - Plastic Limit PI - Plasticity Index

U.4 - 4" Dia. Undisturbed Sample

γ - Natural bulk density q_u - Unconfined compressive strength
 e U.1½ - 1½" Dia. Undisturbed Sample D - Disturbed Sample

c - Apparent cohesion ϕ - Angle of internal friction
B - Bulk Sample

ϕ - Angle of internal friction

TRIAL ' PIT '
BOREHOLE

JOB NO. 1025 TRIAL PIT NORTH OLETO D

DATE COMMENCED: 3-2-66

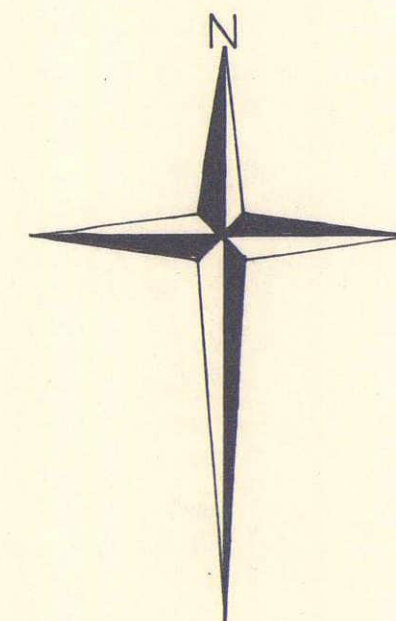
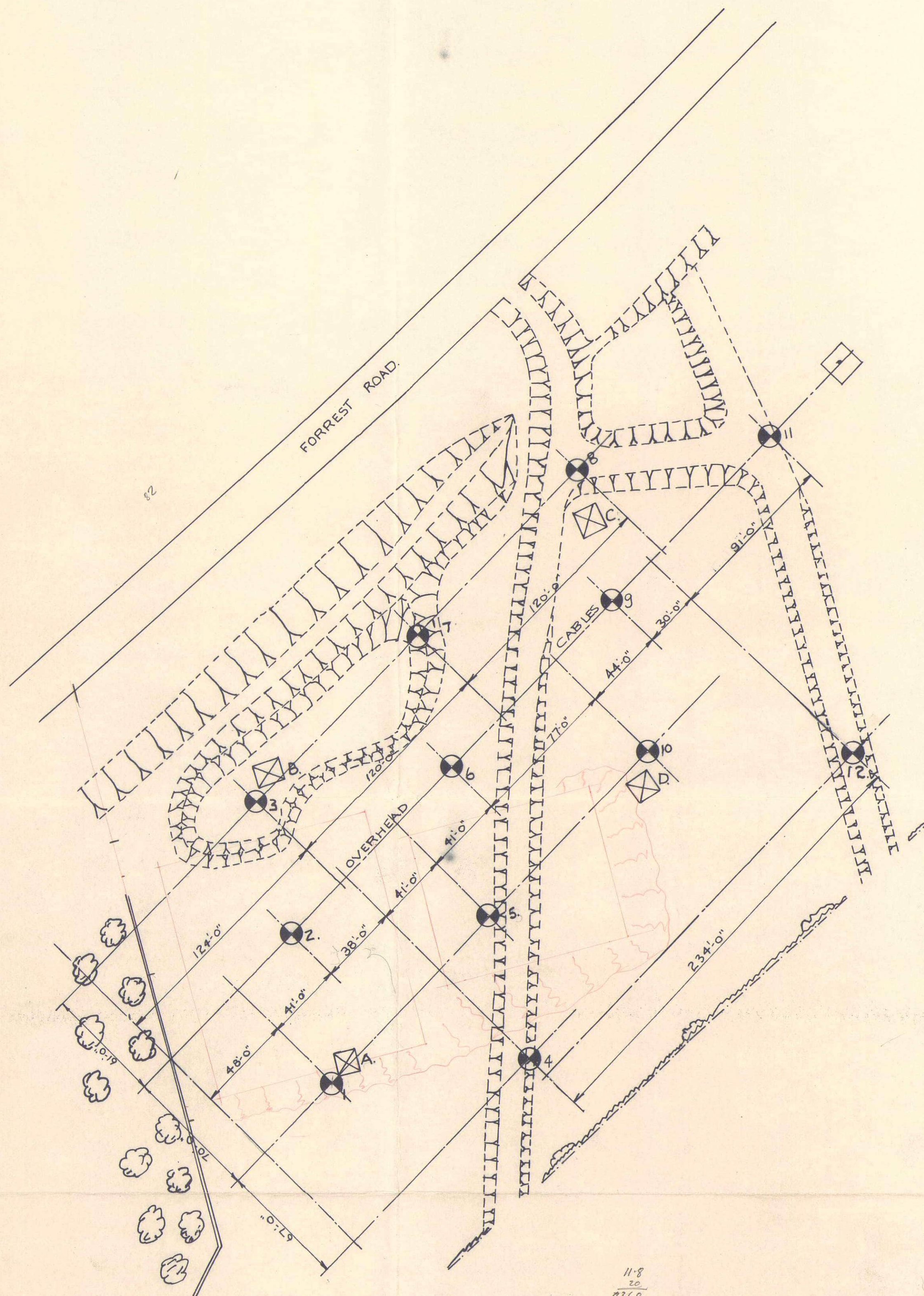
E						
N						

DATE COMPLETED: 3-2-66

[illegible]

REMARKS: x This material resembles a slightly cemented sand with fragments of soft sandstone.

SYMBOLS: n - No. of blows per foot in standard penetration test w - Natural moisture content γ - Natural bulk density q_u - Unconfined compressive strength c - Apparent cohesion ϕ - Angle of internal friction
 L.L. - Liquid Limit P.L. - Plastic Limit P.I. - Plasticity Index U.4 - 4" Dia. Undisturbed Sample U.1½ - 1½" Dia. Undisturbed Sample D - Disturbed Sample B - Bulk Sample



SOUTH OF SCOTLAND ELECTRICITY BOARD
132 k.V. SUBSTATION
FORREST ROAD
CUMBERNAULD

ARRANGEMENT OF BORES
 SCALE 1/500

DRAWING N° 1025/1

DRAWN BY : *SL*
 CHECKED BY : *ED*

SCOTSOIL SURVEYS LIMITED
 NATIONAL BANK BUILDINGS
 BATHGATE

23rd. February 1966.

Appendix C. Coal Mining Abandonment Plans



West Forest



Magnetic Meridian 25° 5' 1955

MINE MOUTH

Reservoir

BORE N°1 PALACERIG
Depth to Bottom of Bore 74ft 2ins.

BORE N°2 PALACERIG
Depth to Bottom of Bore 81ft 1in.

AIR PIT
DEPTH 60ft

3 THROW RAM PUMP
25,000 Gallons in 24 hours
5 Hours per day

BRICKWORK WATER DAM
8ft wide x 5ft high x 9ins thick

AIR PIT
DEPTH 30ft

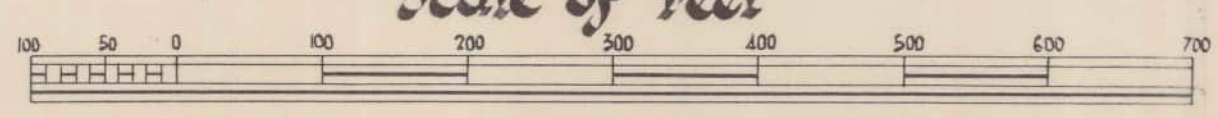
10-15 H.P. TURBINE PUMP
40 Gallons per Minute
8 Hours per day

Cumbernauld Mine

Plan Shewing

GLENBOIG UPPER & UPPER LEAF OF GLENBOIG LOWER FIRECLAY WORKINGS

Scale of Feet



PARISH OF CUMBERNAULD
COUNTY OF DUMBARTON

Note:-
Levels and Contours shown are to Ordnance Survey Datum. (Liverpool)
Lower Leaf of Glenboig Lower Fireclay Workings shown coloured Blue.
Upper Leaf do do do Red.
Glenboig Upper Fireclay Workings do do Green.

This plan is a true copy of the working plan of the mine as completed up to 17th December, 1959 and I certify after thorough examination and inquiry that to the best of my knowledge and belief it is an accurate plan of the mine.

Note:-
I certify that this plan shews the extent of the workings as at 17th December 1959 and that no further work affecting the accuracy of the plan has been carried out since that date.

BORE N°5
Surface Level 518.6
Fireclay Level 599.6

BORE N°7
Surface Level 524.3
Fireclay Level 415.3

BORE N°10

BORE N°9
Depth to Fireclay 106ft 10ins

BORE N°8
Depth to Fireclay 40ft 2ins

BORE N°4
Surface Level 523.4
Fireclay Level 408.4
AIR PIT
DEPTH 90ft

BORE N°2
Surface Level 522.2
Fireclay Level 401.2

BORE N°1
Surface Level 522.3
Fireclay Level 432.3

BORE N°3
Surface Level 516.2
Fireclay Level 429.2

BORE N°6
Depth to Fireclay 70ft 9ins

BORE N°11
Depth to Fireclay 82ft 9ins

BORE N°12
Depth to Fireclay 85ft 9ins

AIR PIT
DEPTH 50ft

SURFACE BORE N°7
Surface Level 542.9

SURFACE BORE N°11
Surface Level 549.1

SURFACE BORE N°6
Surface Level 551.4
Depth of Moss 15ft 0ins

SURFACE BORE N°10
Surface Level 551.9

SURFACE BORE N°9
Surface Level 552.9

SURFACE BORE N°5
Surface Level 553.0
Depth of Moss 12ft 6ins

SURFACE BORE N°1
Surface Level 554.4

SURFACE BORE N°8
Surface Level 541.9

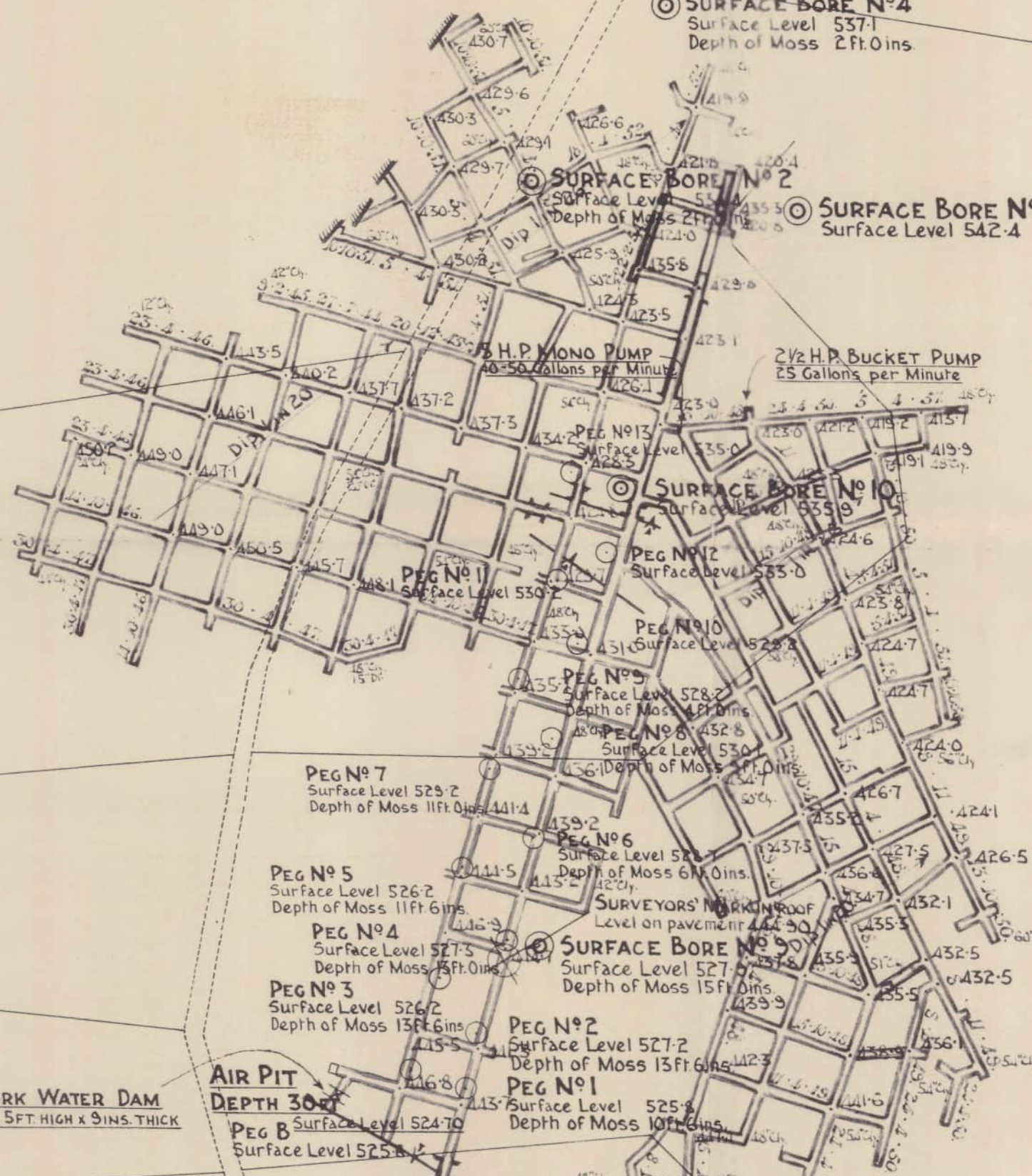
N°4 BORE PALACERIG
Depth to Bottom of Bore 150ft 9ins

SURFACE BORE N°1
Surface Level 556.9
Depth of Moss 4ft 6ins

SURFACE BORE N°4
Surface Level 537.1
Depth of Moss 2ft 0ins

SURFACE BORE N°2
Surface Level 537.1
Depth of Moss 2ft 0ins

SURFACE BORE N°3
Surface Level 542.4



BORE N°5 PALACERIG
Surface Level 549.97
Bottom of Bore 509.97
Depth of Moss 15ft 9ins

GENERAL SECTION OF SEAMS

GLENBOIG UPPER FIRECLAY

COAL
FIRECLAY 36ins
DIRT 22ins
FIRECLAY 38ins

GLENBOIG LOWER FIRECLAY UPPER LEAF

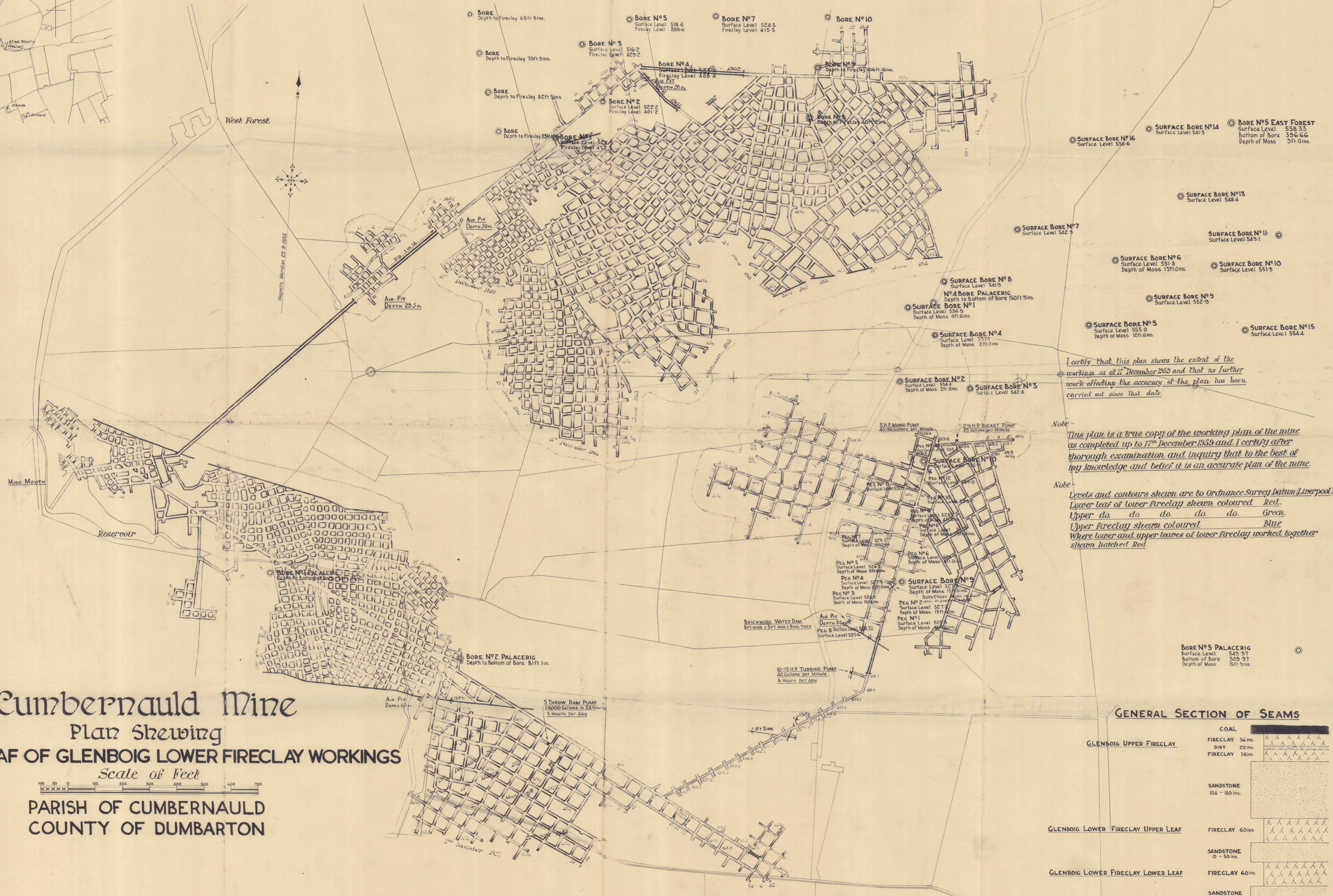
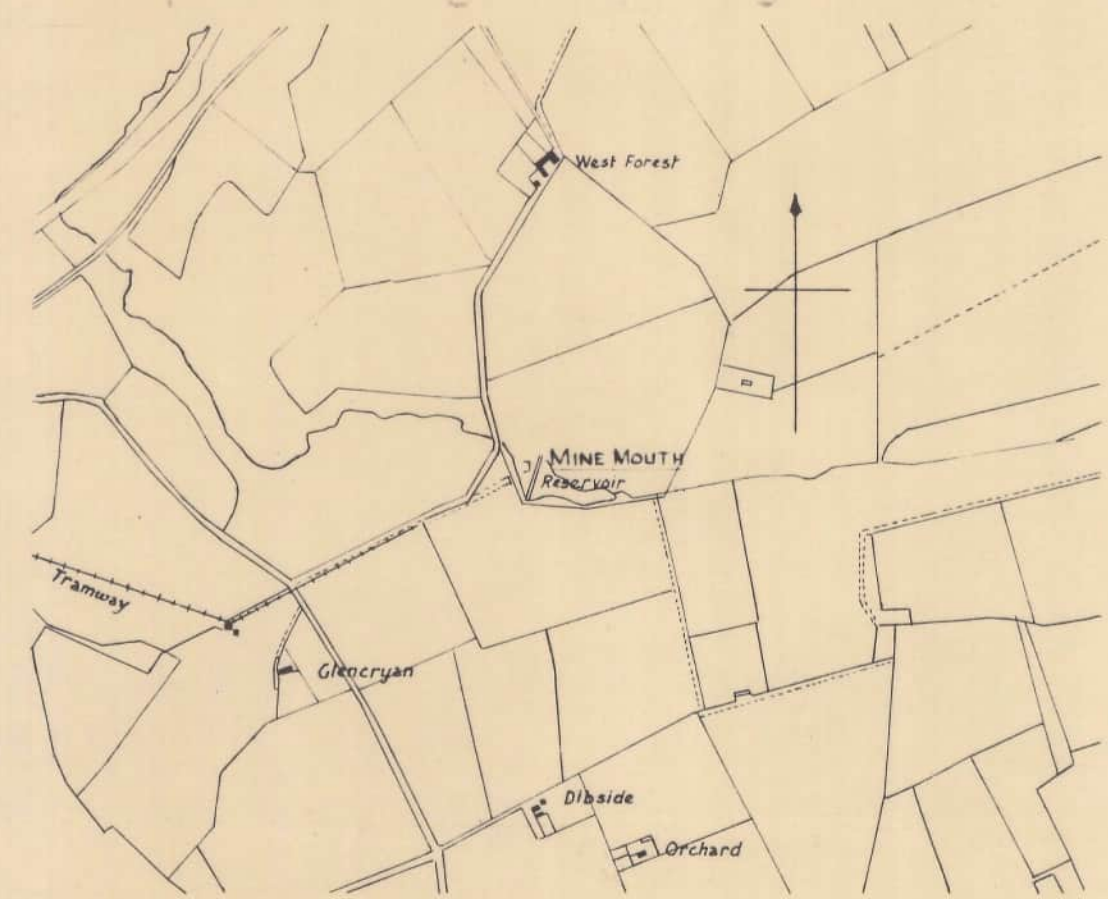
FIRECLAY 60ins

GLENBOIG LOWER FIRECLAY LOWER LEAF

FIRECLAY 60ins

SANDSTONE
0 - 50ins

SANDSTONE



I certify that this plan shows the extent of the workings as at 17th December 1959 and that no further work affecting the accuracy of the plan has been carried out since that date.

Note -
 This plan is a true copy of the working plan of the mine as completed up to 17th December 1959 and I certify after thorough examination and inquiry that to the best of my knowledge and belief it is an accurate plan of the mine.

Note -
 Levels and contours shown are to Ordnance Survey Datum (Liverpool).
 Lower leaf of lower fireclay shown coloured Red.
 Upper do. do. do. do. Green.
 Upper fireclay shown coloured Blue.
 Where lower and upper leaves of lower fireclay worked together shown hatched Red.

BORE NO. 5 PALACERIG
 Surface Level 545.97
 Bottom of Bore 305.97
 Depth of Moss 151.0 ins.



OUR OFFICES.

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Appendix G Council Enquiries



Environmental Enquiry

Site Name: Cumbernauld sub station

Date: 03 November 2025



Site Name: Cumbernauld sub station

Address: , , ,

Further to your search request regarding the above site, we are pleased to provide you with the following information, which represents a summary of records we have available, with regards to potential historical contamination and the above site with a 250M buffer of surrounding area.

Statutory Contaminated Land;

Please see link to Contaminated Land Register for details of Land designated as defined under Part IIA of the Environmental Protection Act 1990:

[Notices served under sections 78B and 78E of the Environmental Protection Act 1990 | North Lanarkshire Council](#)

Please also note that any site with a past historical industrial use may form part of our future inspection strategy.

Planning sites

Information relating to planning applications can be searched here:

[View and comment on planning applications | North Lanarkshire Council](#)

Whilst all reasonable care has been taken to ensure the accuracy of the information and data provided in this response, North Lanarkshire Council accepts no liability for any loss or damage howsoever caused arising from any reliance placed by any other person upon the information and data contained herein.

NB. The intention of this document is to highlight areas of potential contamination. While it may be used as the basis for Phase 1 site investigation, further analysis, assessment and, where necessary, additional information may be required to satisfy the criteria stated in the Contaminated Land Regulations (CLR) 11.

It should also be noted that this report includes historical map extracts dating back to the 1850's. These maps were produced on a county by county basis and as county boundaries have changed over the intervening years, the resultant mapping forms a patchwork. Consequently, blank maps will be produced in some areas where the historical database has been searched but mapping is not available.

The production of blank mapping is expected and indicates that the entire historical database has been searched for the area of interest.

Statutory Notices Served

Notices served under Section 80, 78B and 78E of the Environmental Act 1990 can be found here:

[Notices served | North Lanarkshire Council](#)

Date: 03 November 2025

Site Name: Cumbernauld sub station

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GLOSSARY OF TERMS

The methodology uses a number of terms, which are defined in Part IIA of the Environmental Protection Act 1990 (hereafter referred to as the Act) and in the statutory guidance itself. The meanings of the most important of these terms are set out below, along with a reference to the section in the Act or the paragraph in which the relevant term is defined. Other terms used in the context of Geographical Information Systems (GIS) are also defined.

Abstraction: An activity licensed by the regulating authority under section 24 of the Water Resources Act 1991, allowing an abstraction or series of abstractions of water or groundwater from inland freshwater sources.

Archived Sites: Sites whose risks have been attributed to a larger site, which they spatially intersect.

Buffer: A zone of a specified distance around features such as buildings which allows spatial analysis to be carried – e.g. find all potentially contaminated land with 50m of a building, or group of buildings.

CLR No. 2: Guidance on Preliminary Site Inspection of Contaminated Land, Vols. 1 and 2, DoE 1994.

CLR No. 3: Documentary Research on Industrial Sites, DoE 1994.

CLR No. 6: Guidance on Prioritisation and Categorisation Procedure For Sites Which May Be Contaminated, DoE 1995.

Contaminated land: “any land, which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that –

- (a) significant harm is being caused or there is a significant possibility of such harm being caused, or;
- (b) pollution of controlled waters is being, or is likely to be, caused.”

Controlled waters: this embraces territorial and coastal waters, inland fresh waters, and ground waters.

Desk Study: Interpretation of historical, archival and current information to establish where previous activities of the land were located and where areas or zones containing distinct and different types of soil contamination can be expected to occur. Also undertaken to understand the environmental setting of the site in

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terms of pathway and receptors using standard checklist given in appendix 8.

Epoch: Time period during which historical potentially contaminative landuses were mapped by Ordnance Survey.

Geo-Dataset: A geo-dataset is a digital file of information providing spatial and descriptive data. It can be imported into a GIS to be analysed and mapped.

GIS: a Geographical Information System (GIS) is a software package capable of showing both graphical information (digital maps) and associated attribute information (from a database). Typical GIS functionality includes, data entry, spatial and textual querying, data analysis and the production of hardcopy maps.

Harm: “harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of humans, includes harm to their property.”

Intrusive investigation: an investigation of land (for example by exploratory excavations), which involves actions going beyond simple visual inspection of the land, limited sampling or assessment of documentary information.

IPC/IPPC: Integrated Pollution Control/Integrated Pollution Prevention and Control.

Landmark Data: Geo-datasets containing historic land-use (some of which may be contaminative), derived by the Landmark Information Group, through the systematic analysis and data capture from historical paper maps representing specified time periods (Epochs), and based on DoE classifications.

LQMD - Land Quality Management Database: An MS Access database allowing detailed site information, including information about potential contamination, to be held and accurately recorded for each identified sub-area. The LQMD also allows the production of accurate site plans and detailed reports.

Made Ground: Material artificially in place comprising of a wide range of materials such as, concrete, tarmacadam, brick materials.

Metadata: Metadata is a textual description of a dataset. It highlights all the information a user of the dataset should be aware of, to use it correctly e.g. date produced, scale, projection, error information, etc.

Pathway Efficiency: The ability of a pathway to transport and distribute contaminants from source to receptor.

Pollutant linkage: the relationship between a contaminant, pathway and a receptor.

Potentially Contaminative Source: An area of land which is potentially contaminative due to its historical use(s).

Prioritisation and Categorisation: The ordering of potentially contaminated sub-areas determined by the proximity of each to any identified target receptors, and categorisation of each sub-area based on the seriousness of the potential impact and urgency of action required.

Priority Grouping: A priority (A, B or C) assigned to sub-areas according to their spatial relationship with receptors or pathways.

Receptor: either:

- (a) a living organism, a group of living organisms, an ecological system or a piece of property which is being, or could be, harmed, by a contaminant; or
- (b) controlled waters which are being, or could be, polluted by a contaminant.

Receptor Sensitivity: Receptors sensitivity to pollutants.

Risk Ranking: Categorisation of potentially contaminated sub-areas in order of priority.

Significant pollutant linkage: a pollutant linkage, which forms the basis for a determination that a sub-area is contaminated land.

Source Protection Zone (SPZ): The part of an aquifer considered to form the catchment to the main sources of underground public water supply and certain other private supplies.

Source Severity: A measure of the contaminative potential of a sub-area based on its former land use.

Sub-Area: a piece of land which has been identified, from historical map sources, as having a potentially contaminative land use. It indicates *potential* contamination.

Sub-area Reconnaissance: A walkover survey of the sub-area.

Walkover Visit: A survey performed to assess and record the visual evidence of land contamination and factors affecting the distribution and impact of contamination.

1. Environmental Enquiry Report

Buffer Search Radius: 250 meters

Site Centre Coordinates (British National Grid): 277387, 674252

Approx. area of search feature: 96,591m²

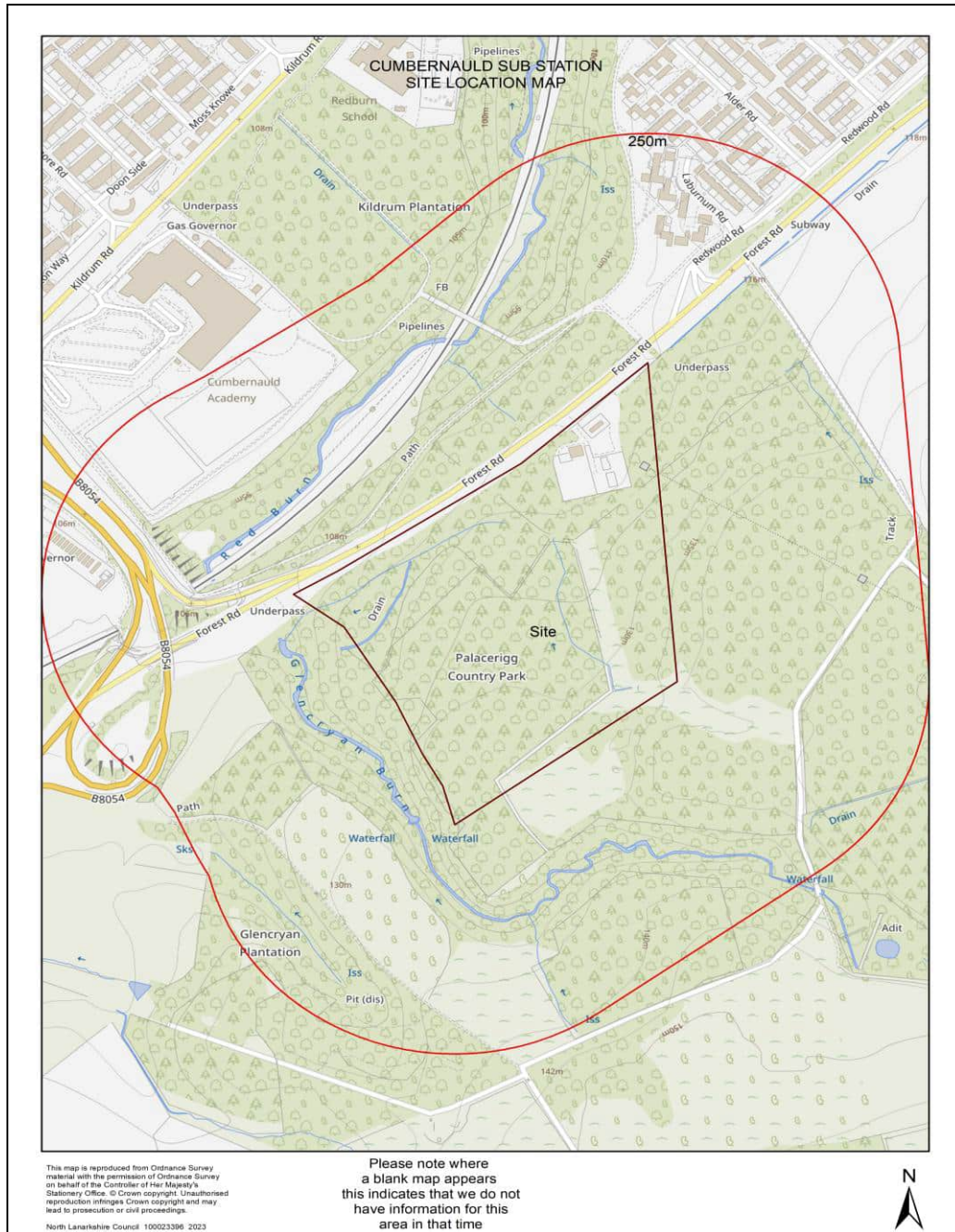
Polygon buffer search

Selection Summary: A total of 19 features were selected on 3 out of 6 target layers.

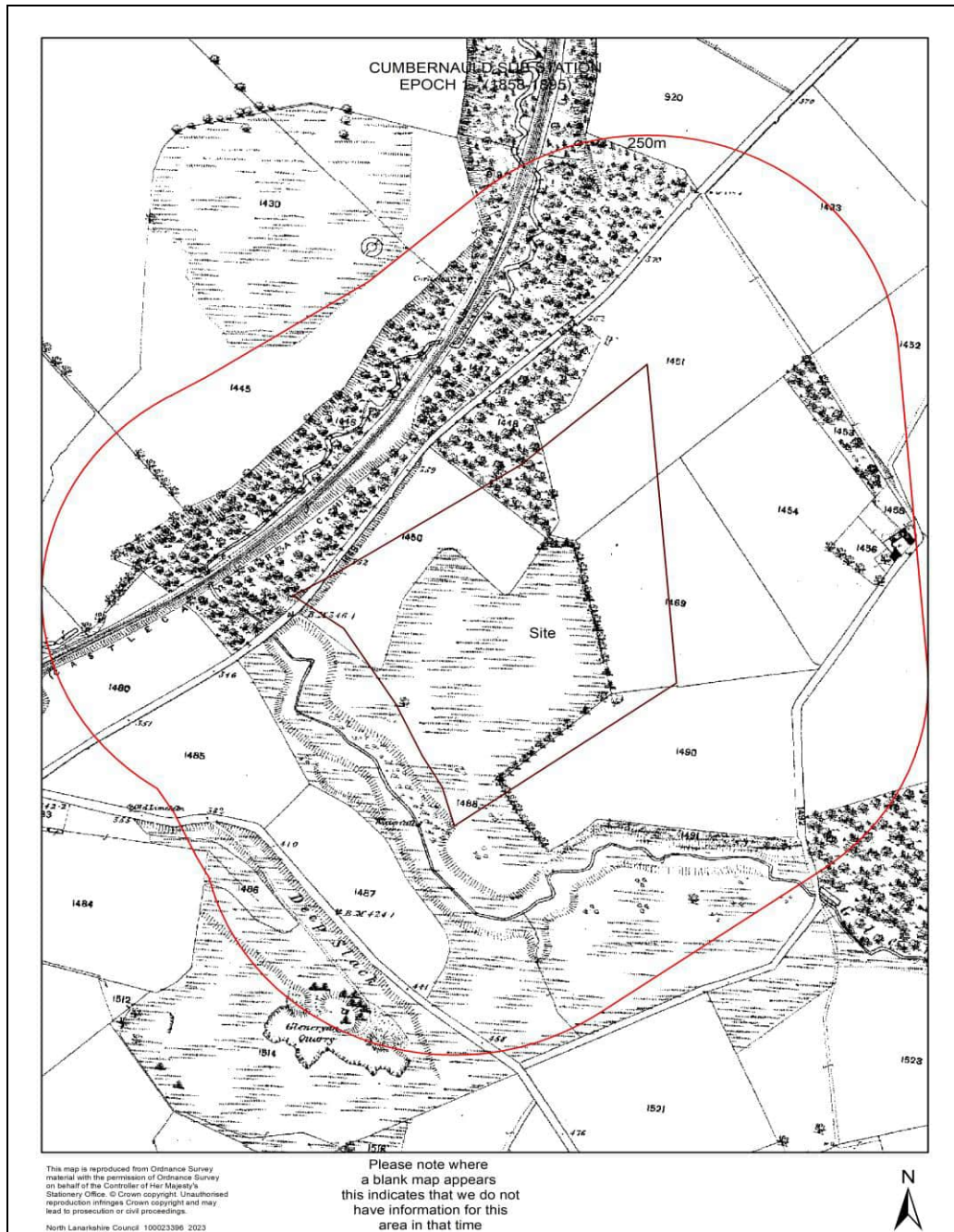
Date: 03 November 2025

Site Name: Cumbernauld sub station

Site Location Map; this section contains site location maps.

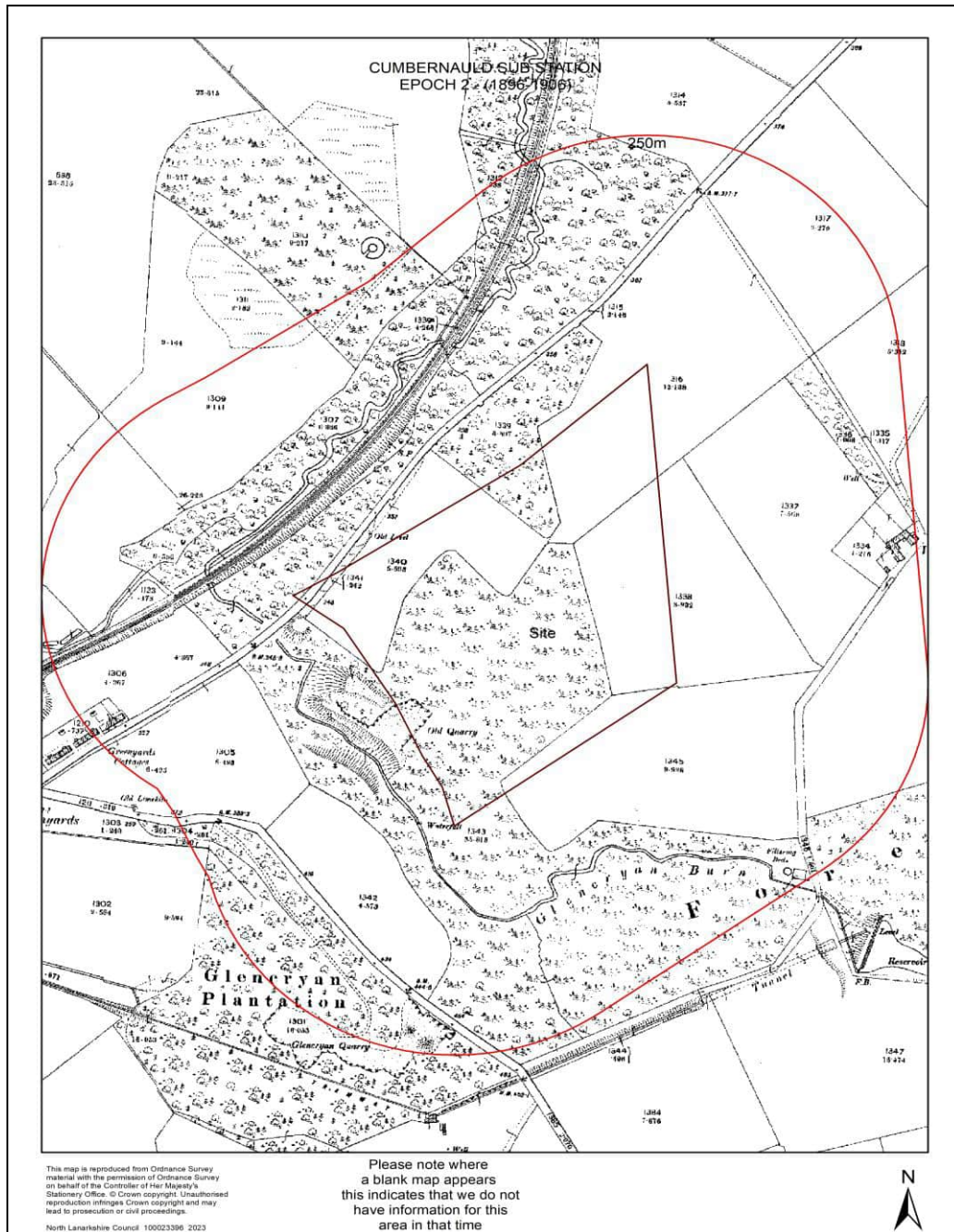


Layer Name: Epoch 1 - (1858-1895)



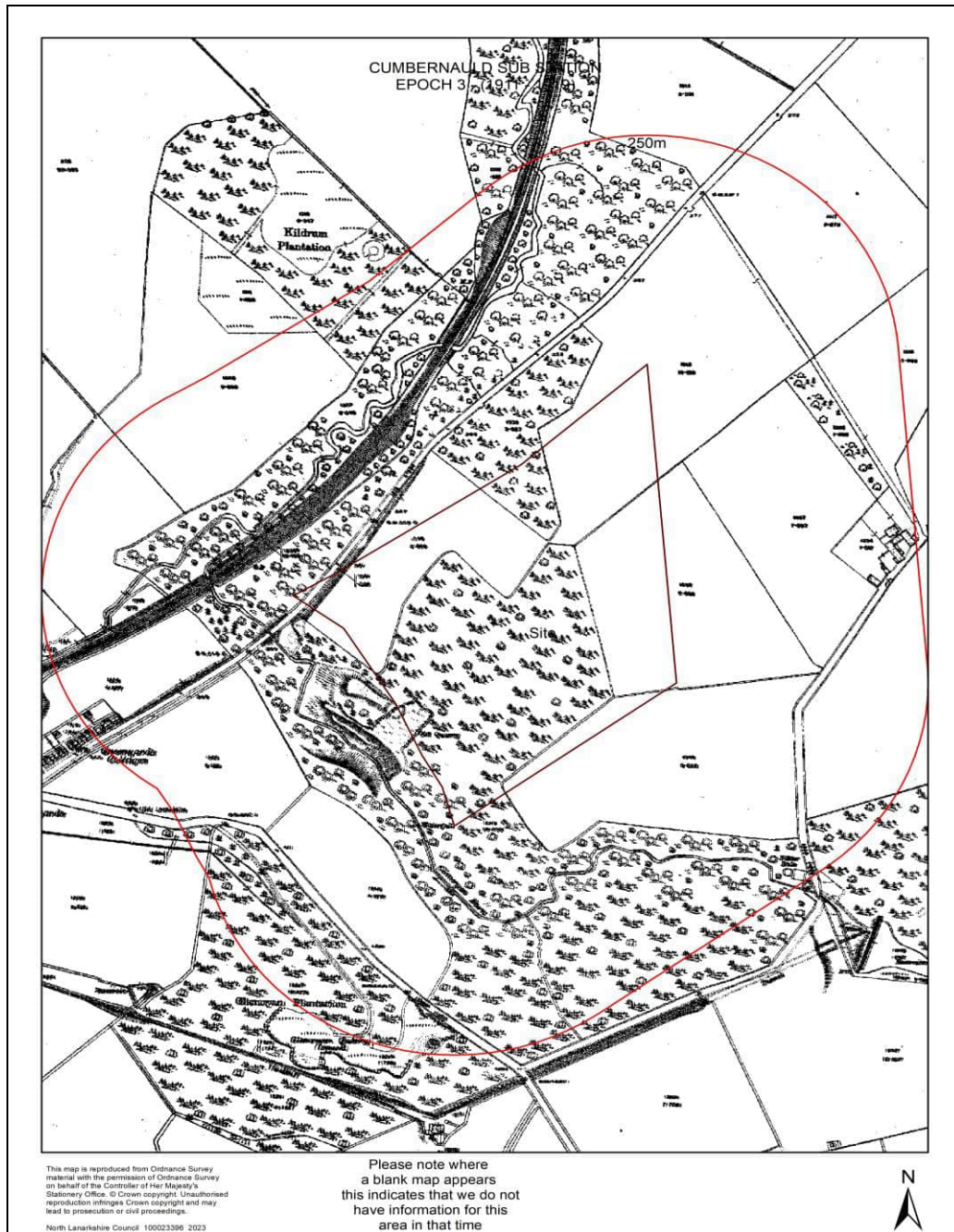
Date: 03 November 2025
Site Name: Cumbernauld sub station

Layer Name: Epoch 2 - (1896-1906)



Date: 03 November 2025
Site Name: Cumbernauld sub station

Layer Name: Epoch 3 - (1911 - 1919)



Please note where a blank map appears this indicates that we do not have information for this area in that time period.

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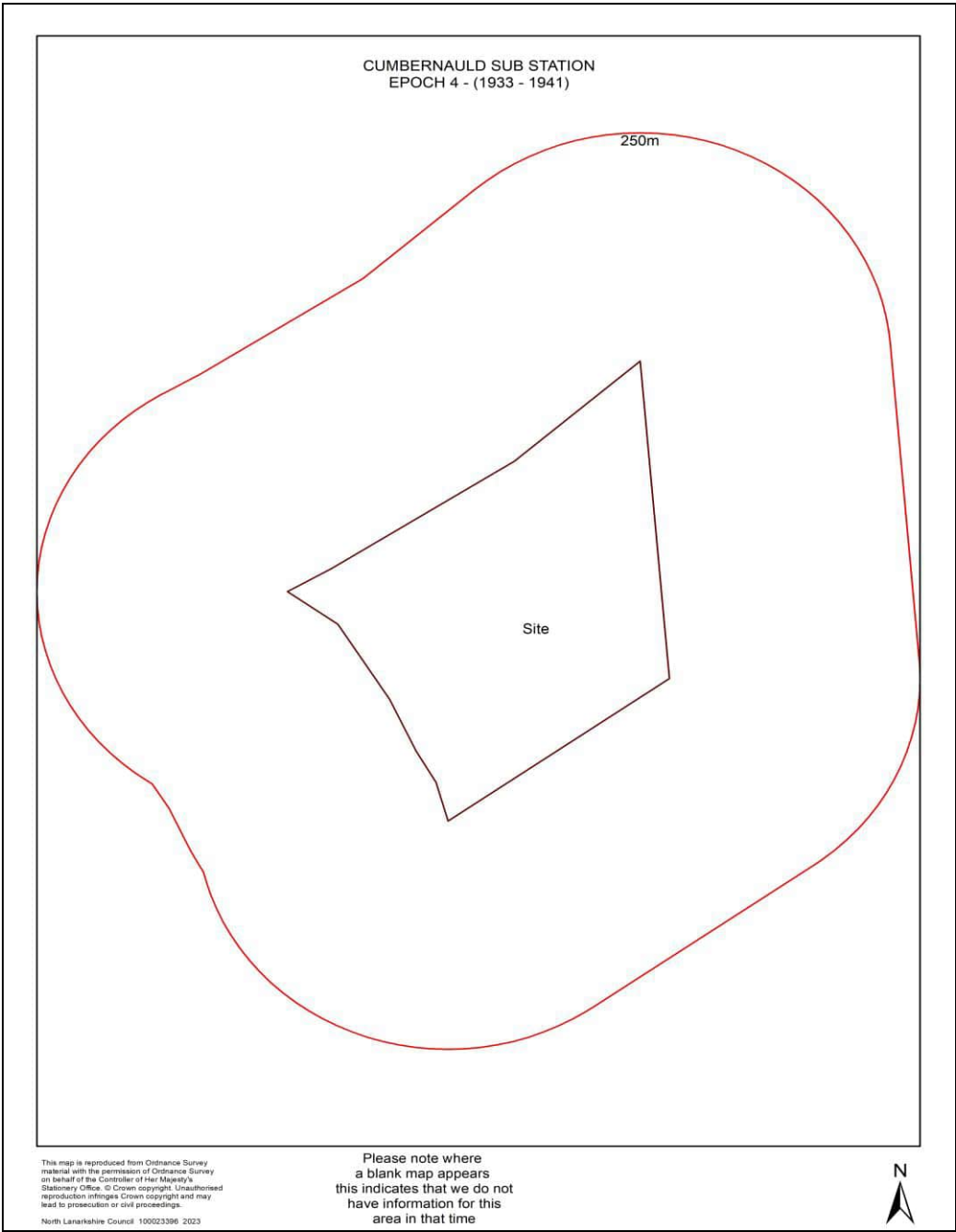
These include current OS Mastermap digital mapping, current OS Large Scale raster mapping, current aerial photography, historical OS mapping and historic aerial photography

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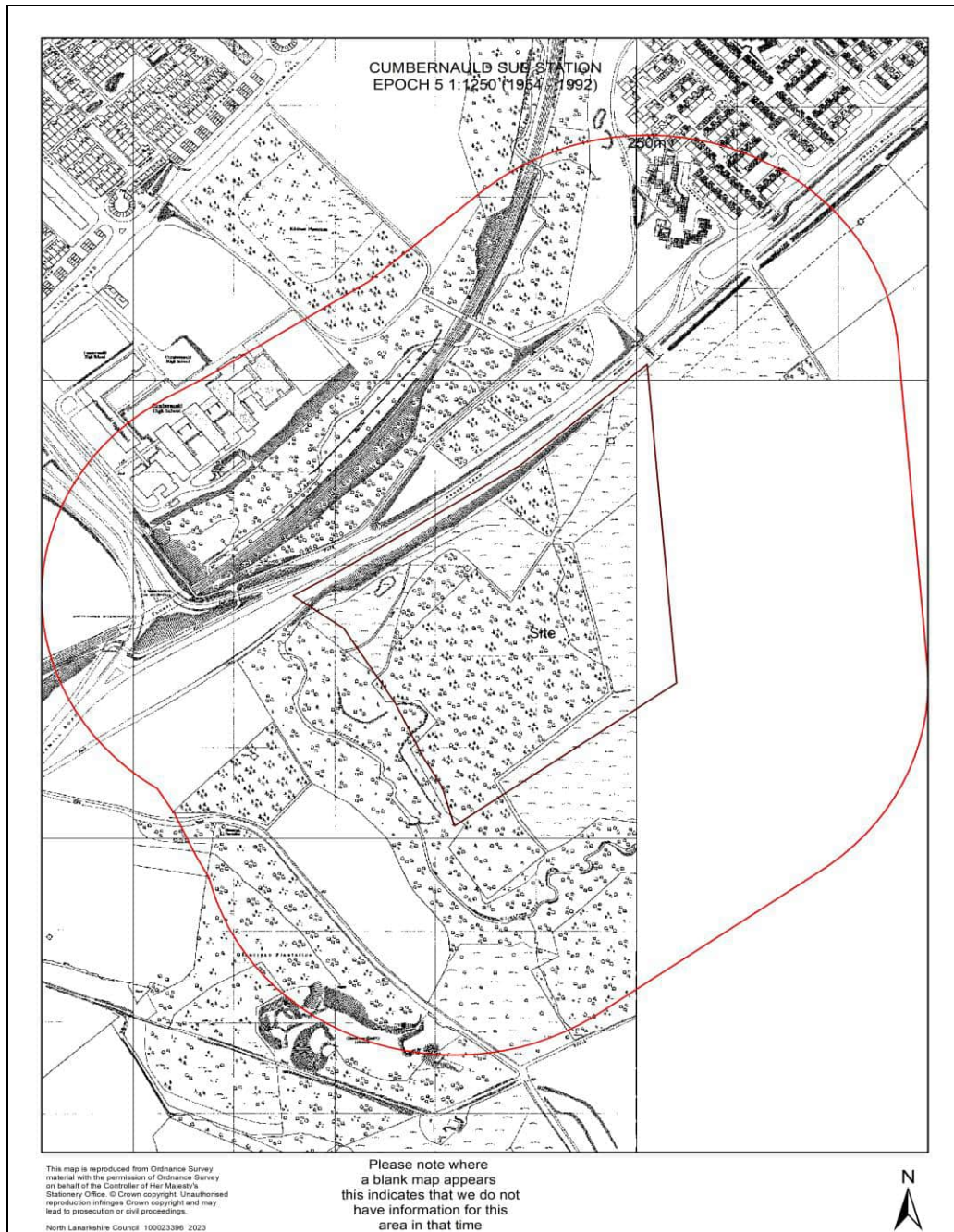
Date: 03 November 2025

Site Name: Cumbernauld sub station

Layer Name: Epoch 4 - (1933 - 1941)

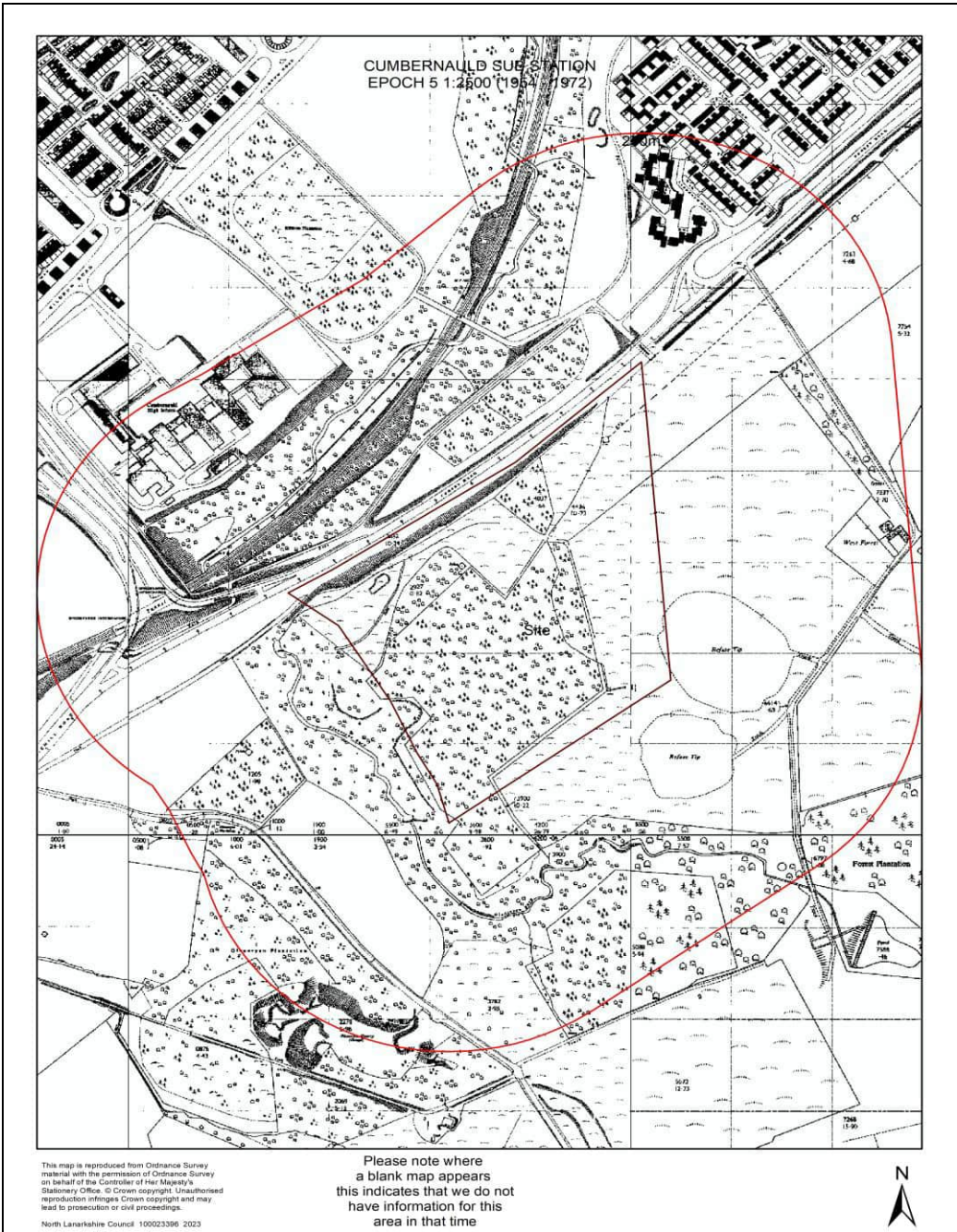


Layer Name: Epoch 5 1:1250 (1954 - 1992)



Date: 03 November 2025

Site Name: Cumbernauld sub station

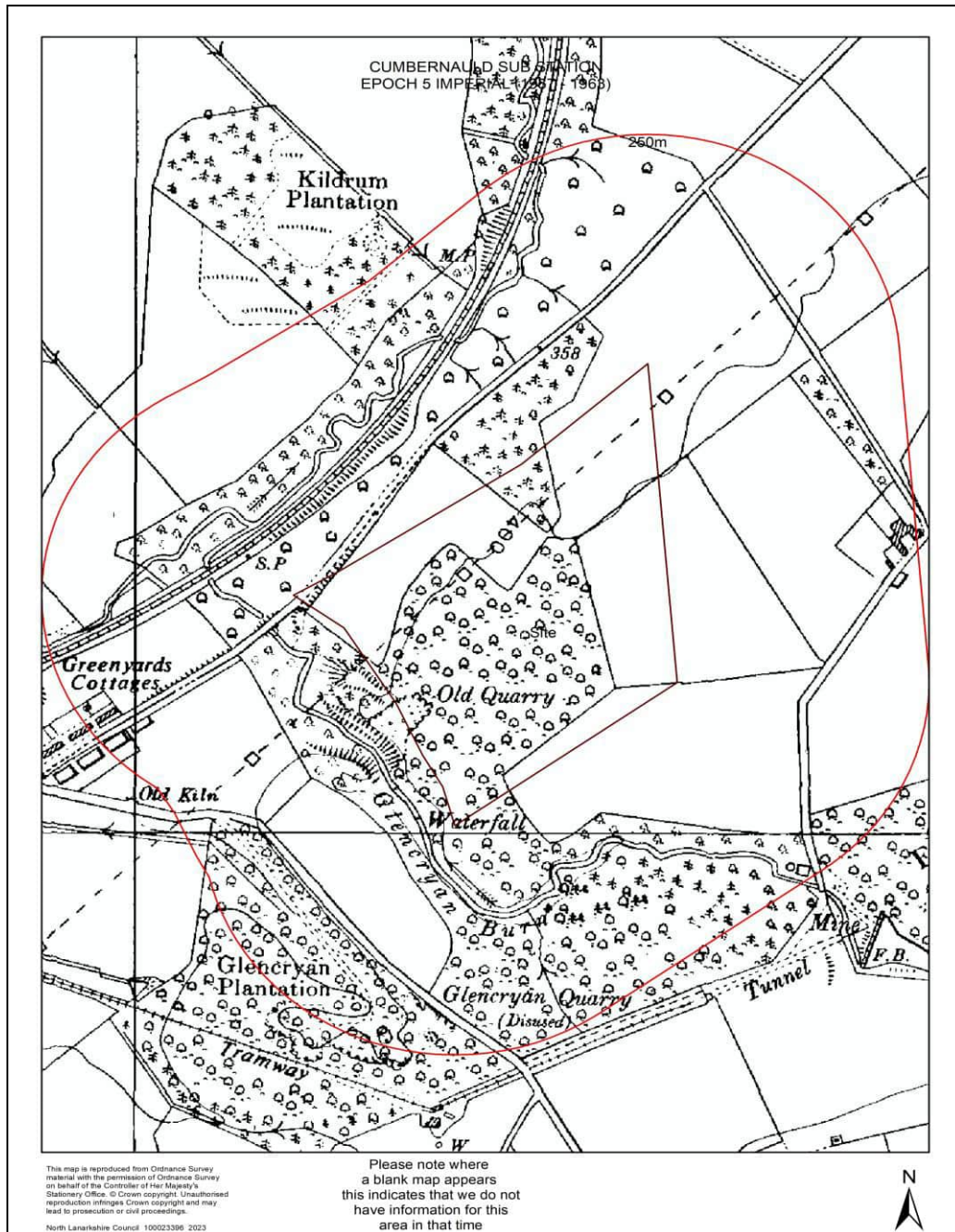


Date: 03 November 2025

Site Name: Cumbernauld sub station

Layer Name: Epoch 5 imperial (1957 - 1963)

Epoch 5 imperial (1957 - 1963)



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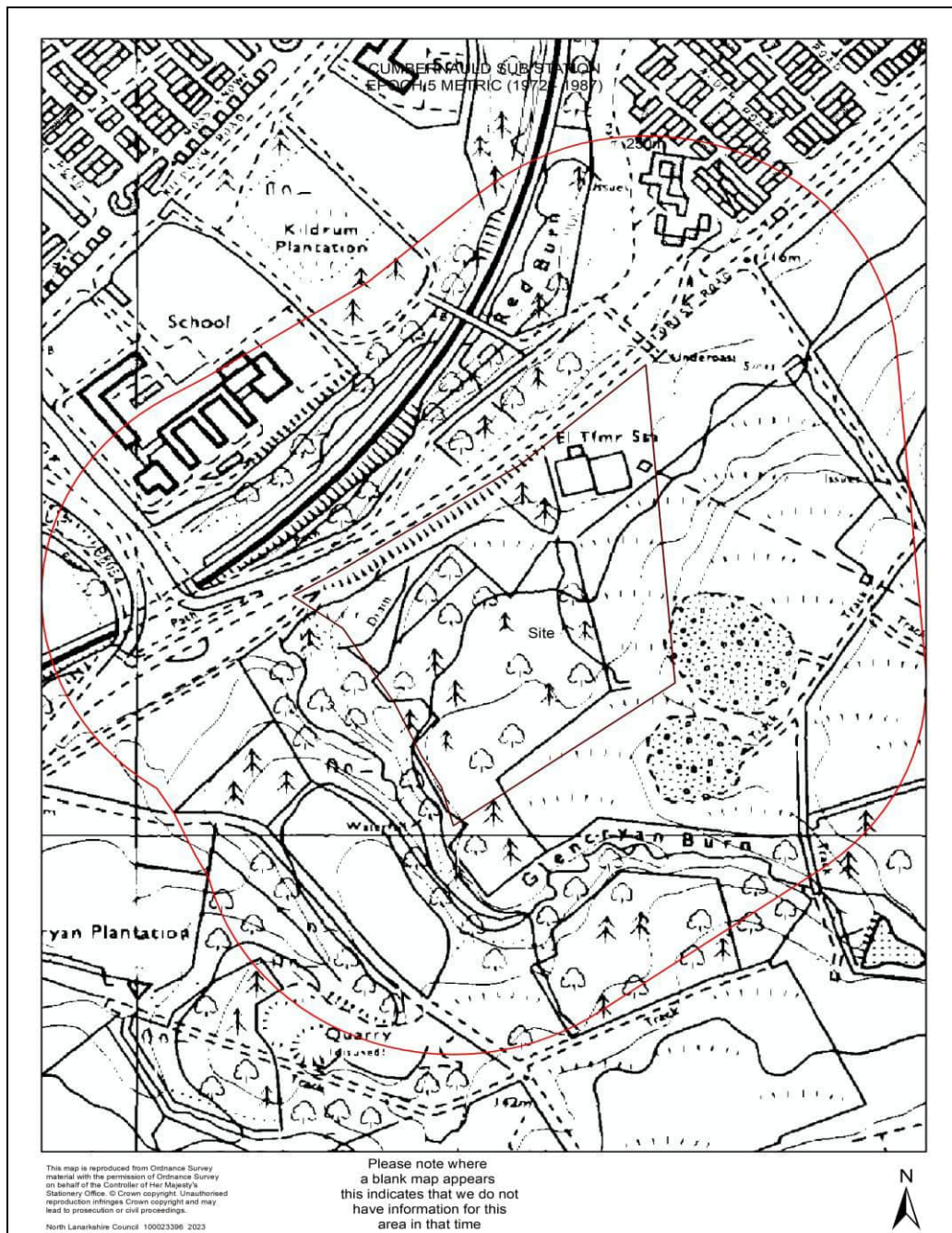
These include current OS Mastermap digital mapping, current OS Large Scale raster mapping, current aerial photography, historical OS mapping and historic aerial photography

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Date: 03 November 2025

Site Name: Cumbernauld sub station

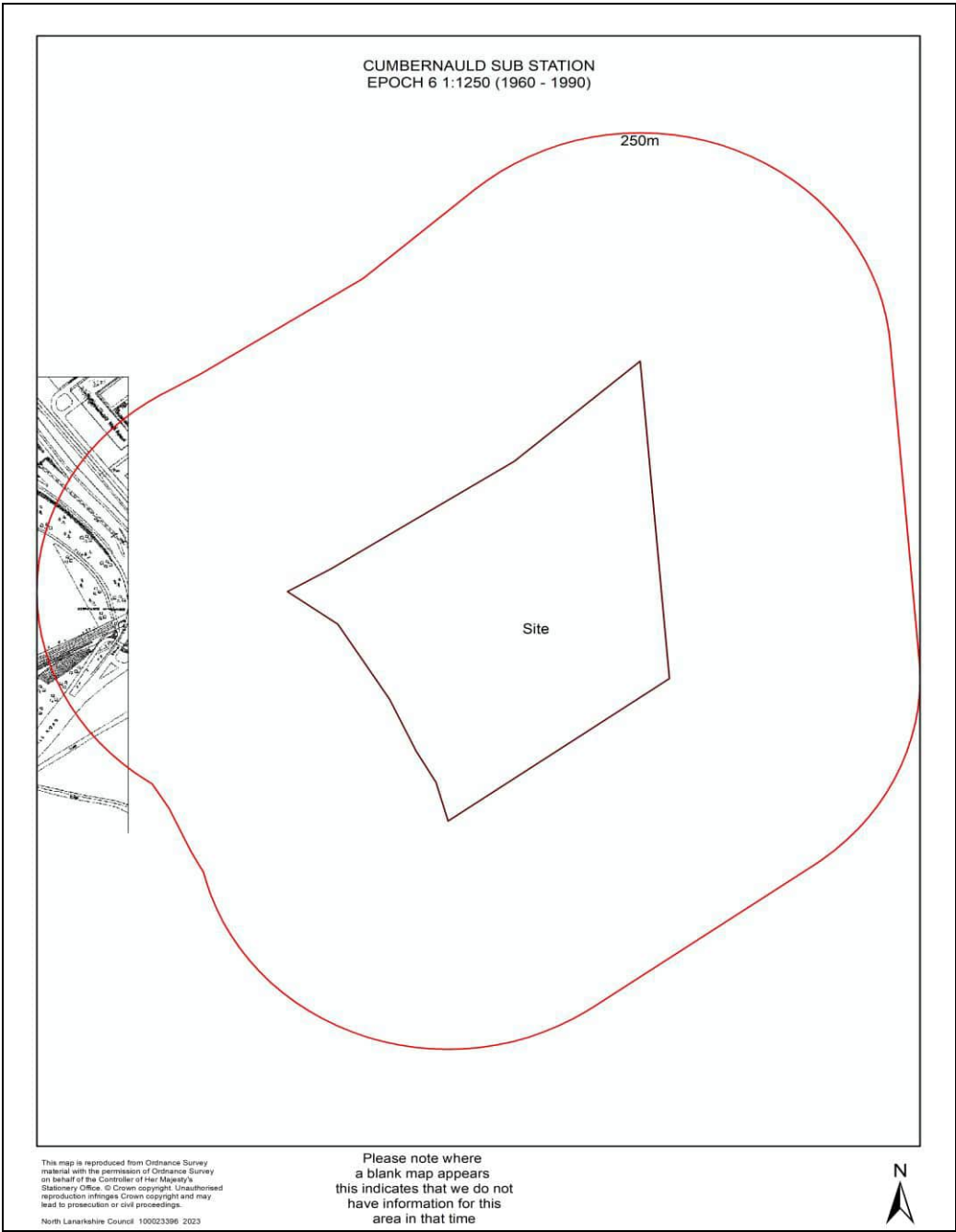
Layer Name: Epoch 5 metric (1972 - 1987)



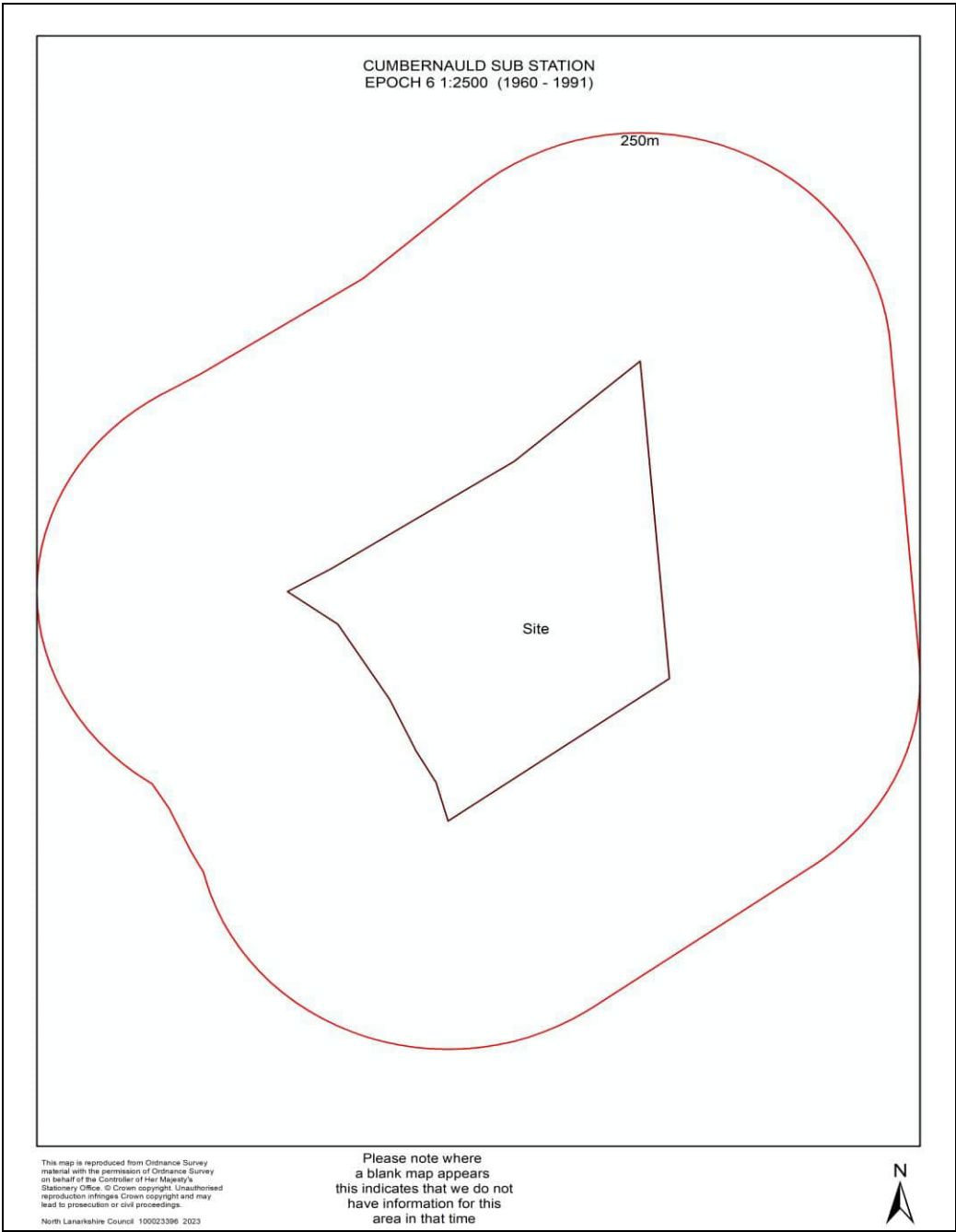
Date: 03 November 2025

Site Name: Cumbernauld sub station

Layer Name: Epoch 6 1:1250 (1960 - 1990)

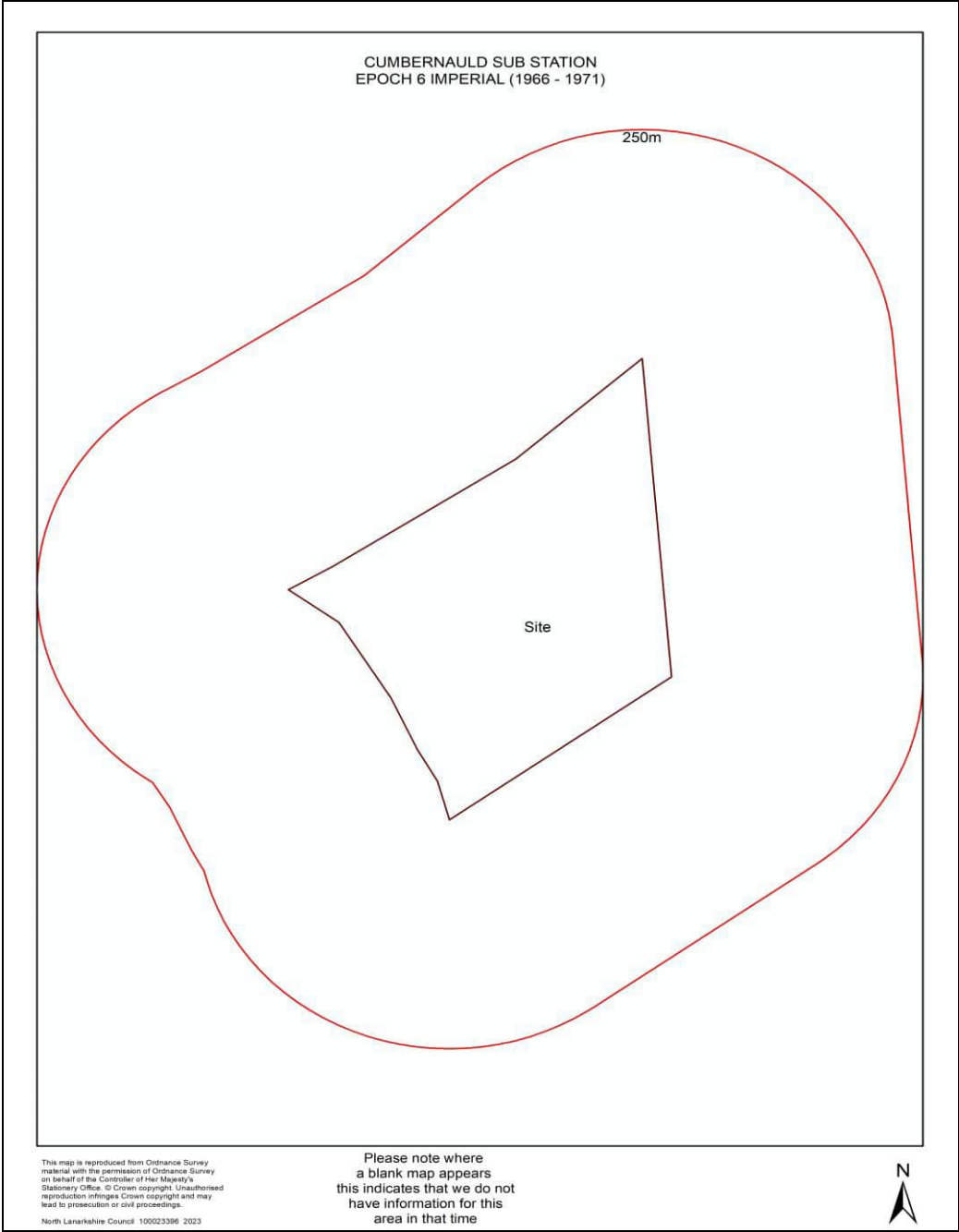


Layer Name: Epoch 6 1:2500 (1960 - 1991)

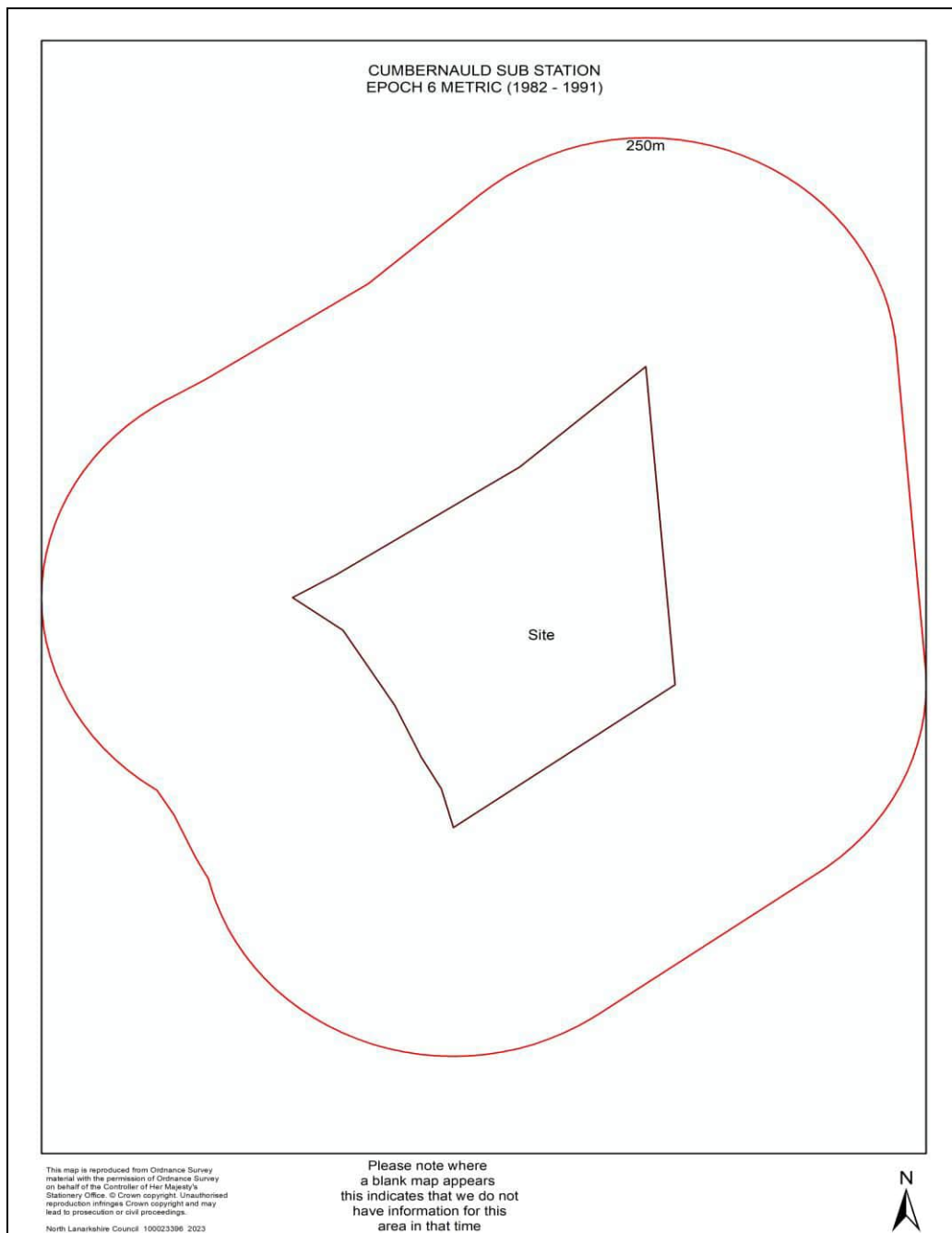


Layer Name: Epoch 6 imperial (1966 - 1971)

Epoch 6 imperial (1966 - 1971)



Layer Name: Epoch 6 metric (1982 - 1991)



Please note where a blank map appears this indicates that we do not have information for this area in that time period.

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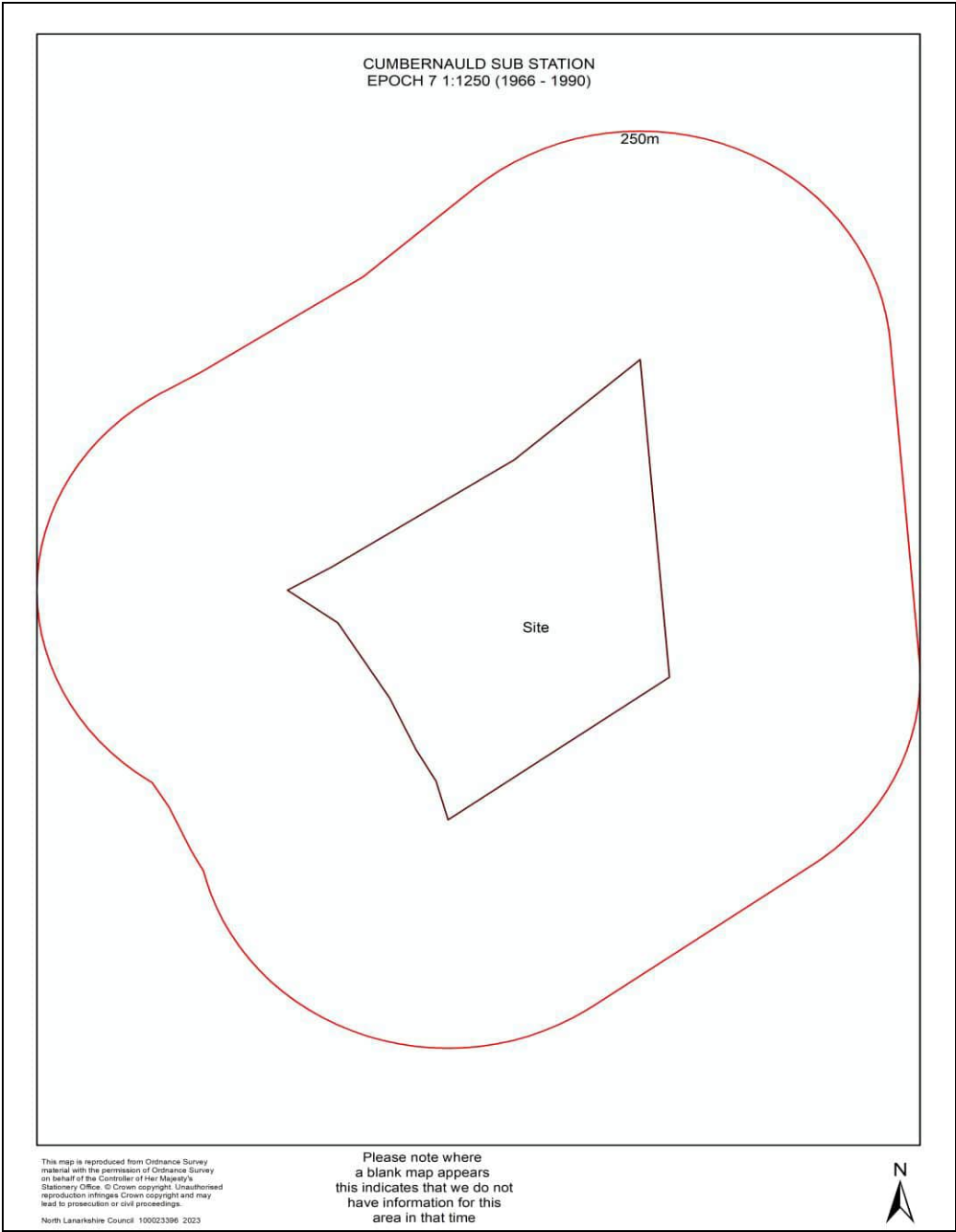
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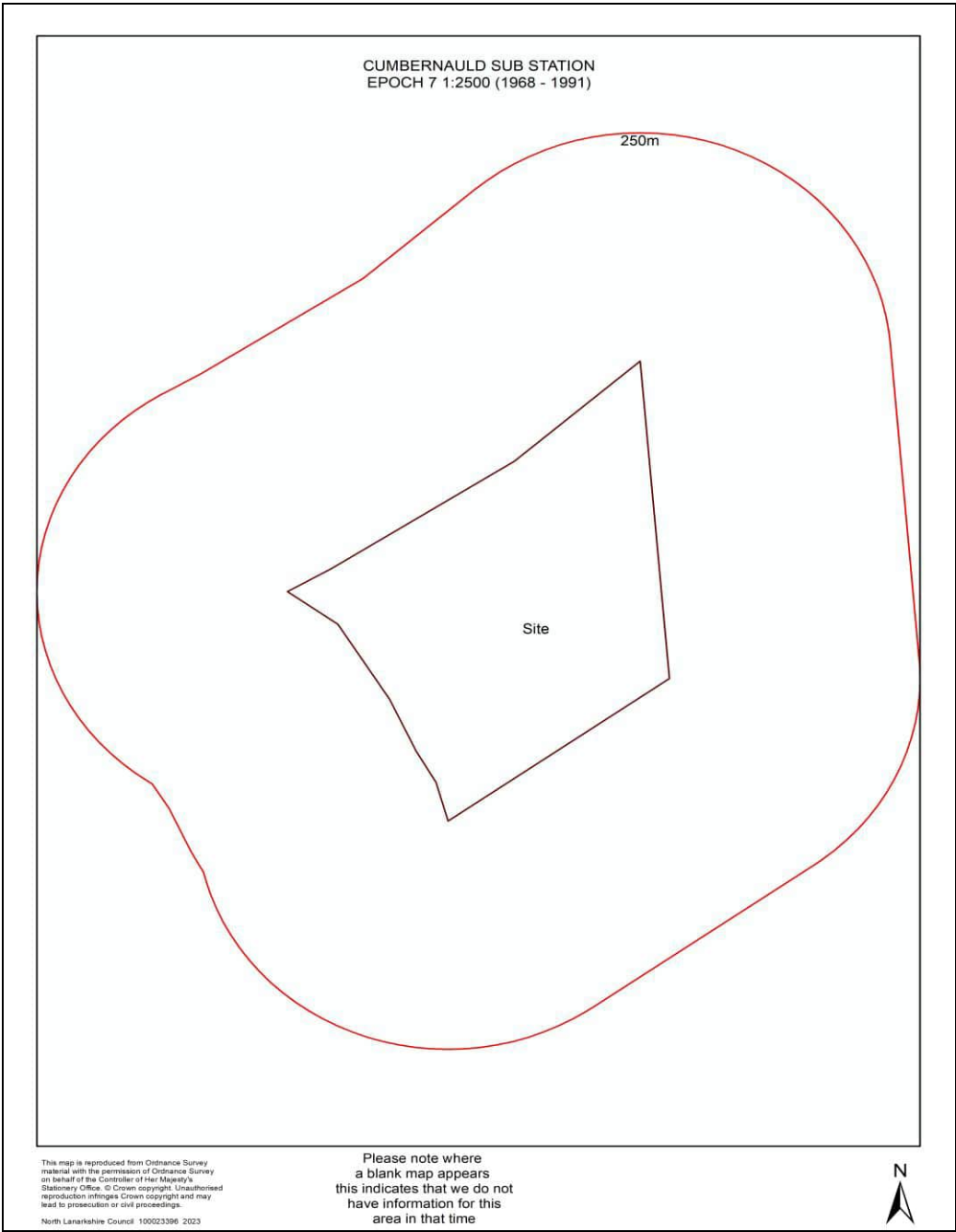
Date: 03 November 2025

Site Name: Cumbernauld sub station

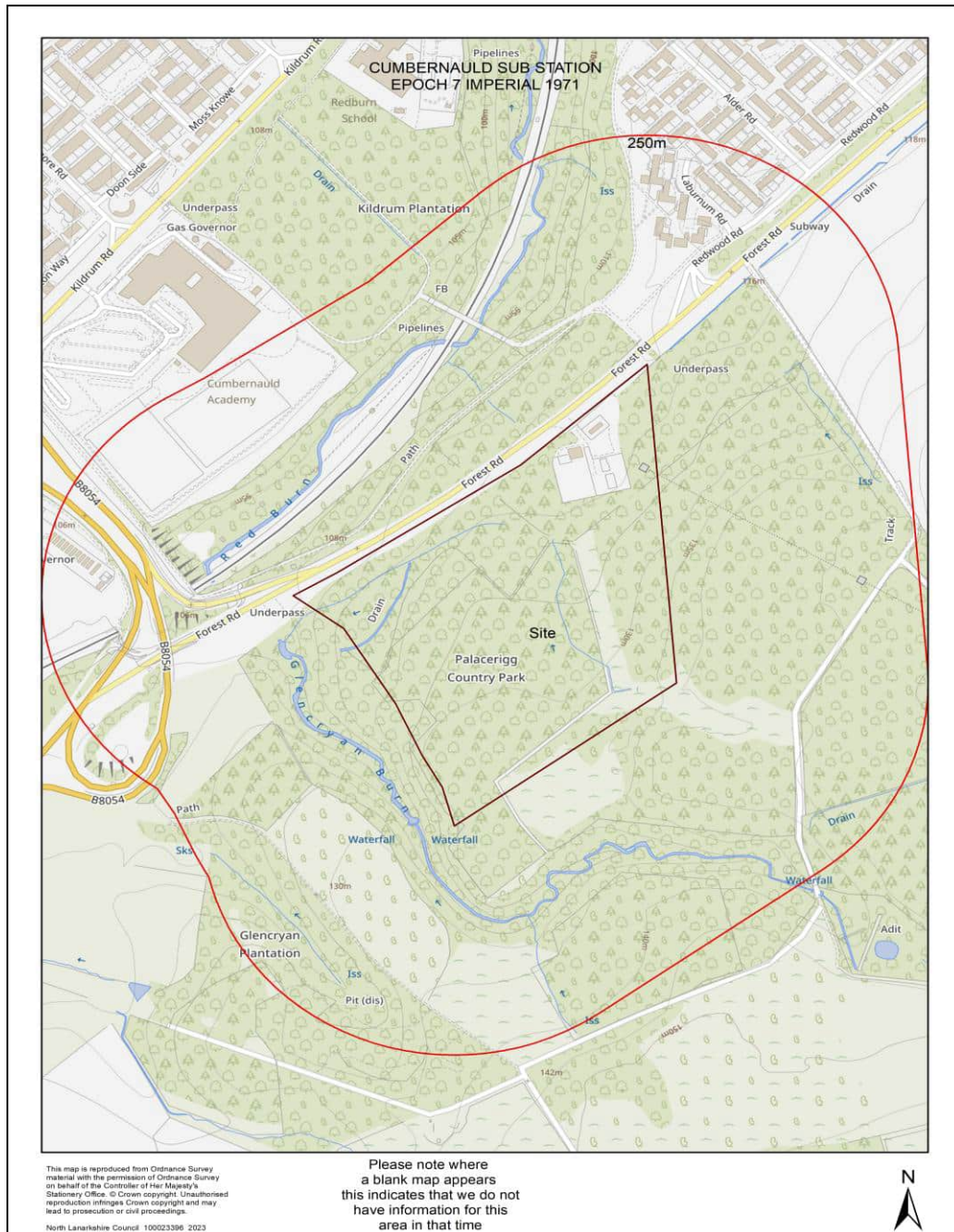
Layer Name: Epoch 7 1:1250 (1966 - 1990)



Layer Name: Epoch 7 1:2500 (1968 - 1991)



Layer Name: Epoch 7 imperial 1971



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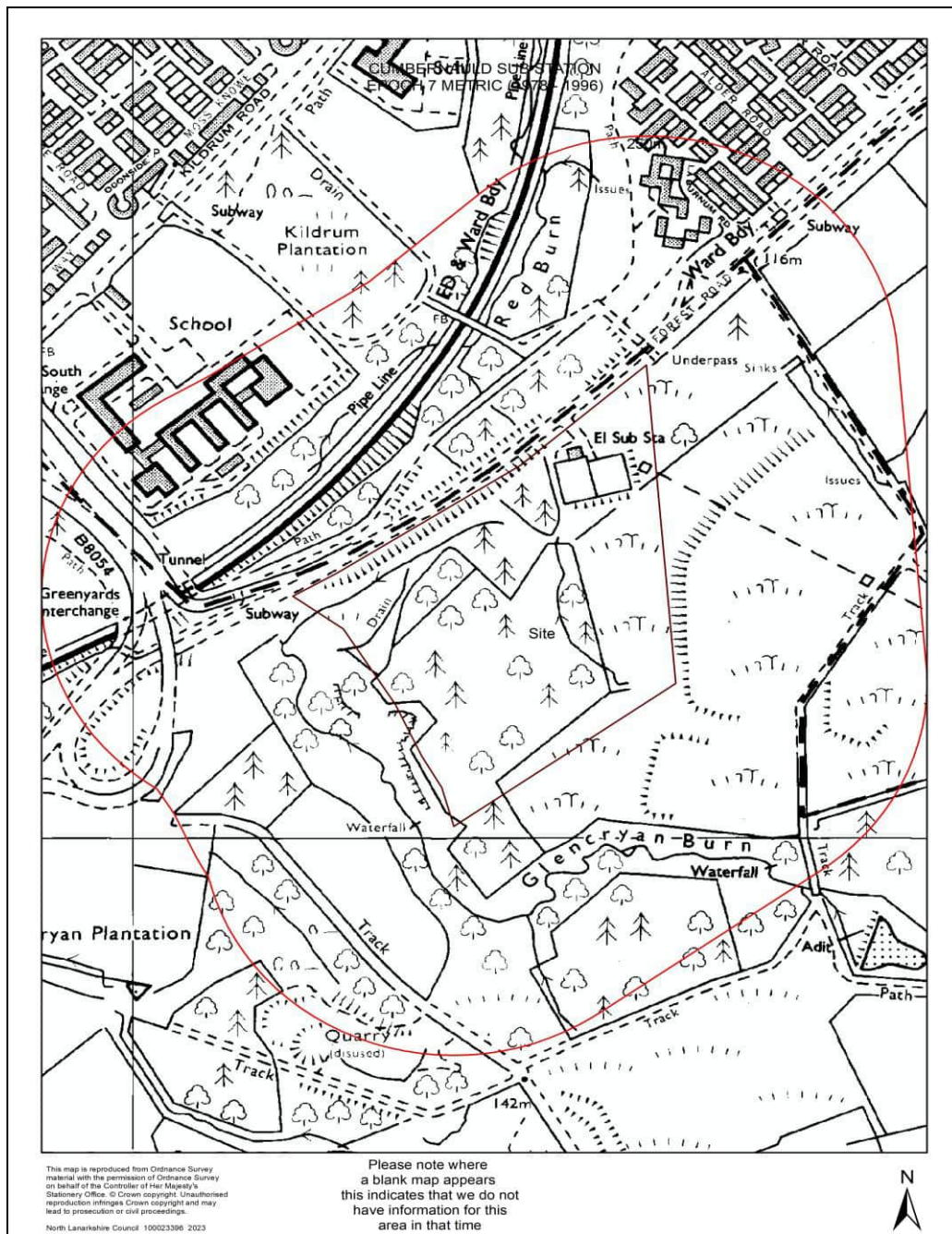
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Date: 03 November 2025

Site Name: Cumbernauld sub station

Layer Name: Epoch 7 metric (1978 - 1996)



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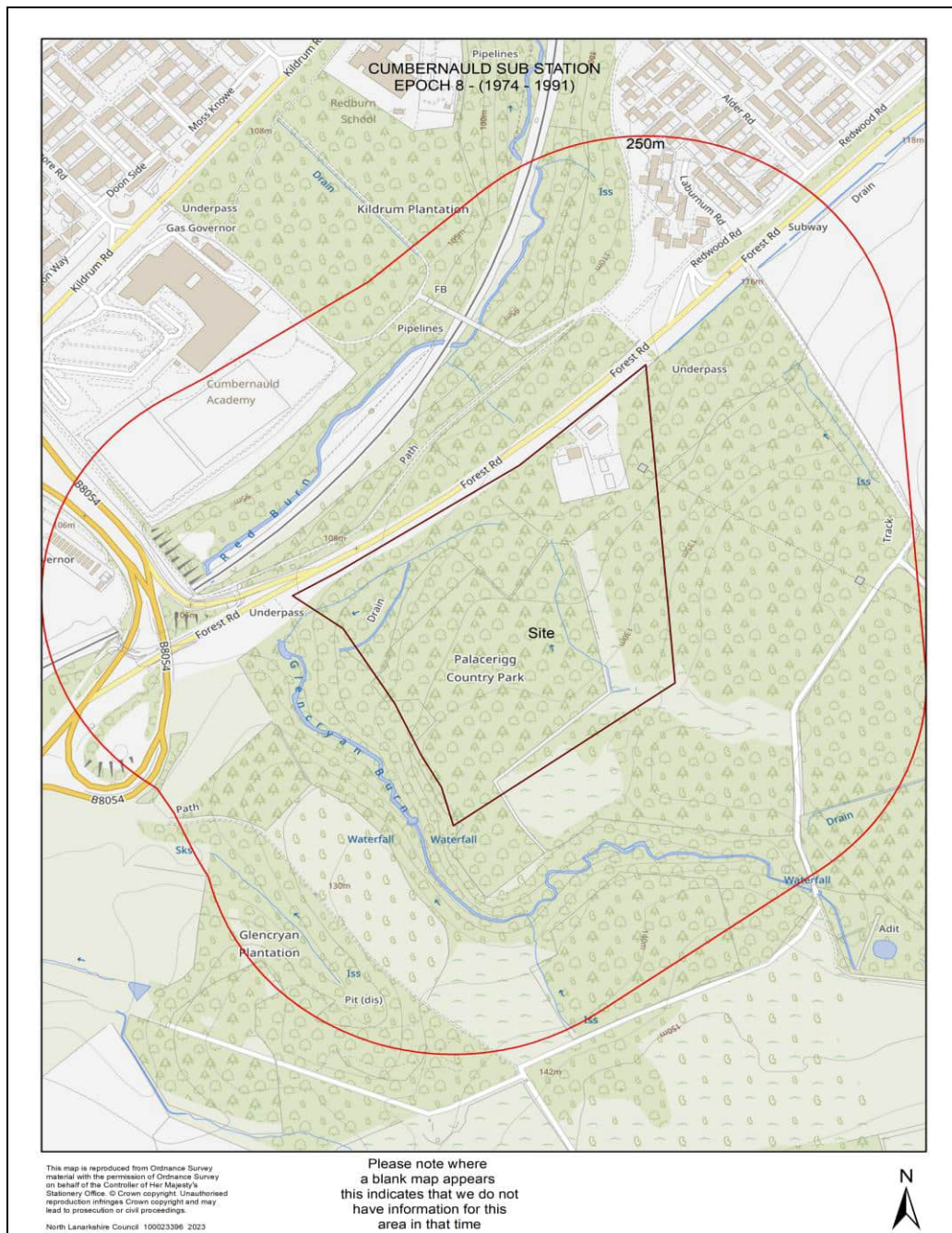
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Date: 03 November 2025

Site Name: Cumbernauld sub station

Layer Name: Epoch 8 - (1974 - 1991)



Date: 03 November 2025
Site Name: Cumbernauld sub station

Layer Name: BASEMAPS/Aerials2010



Date: 03 November 2025
Site Name: Cumbernauld sub station

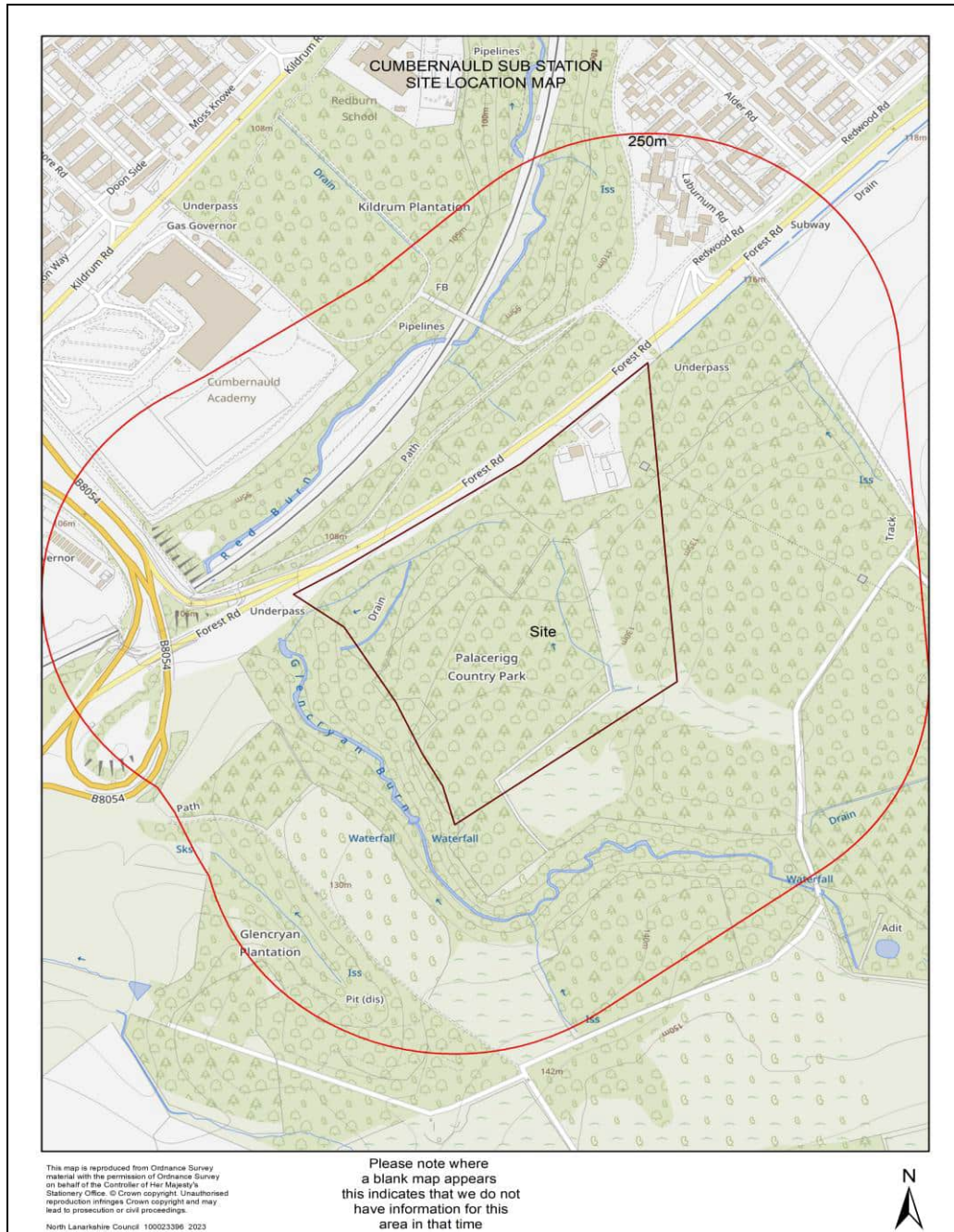
2. Summary Datasheet

Search Layer Name	Search Distance	Data Available	No. of features identified	Feature ID
SP3_Polygons	250 m	Yes	16	PCL001593, PCL005692, PCL005693, PCL005694, PCL005695, PCL005997, PCL005998, PCL006009, PCL008317, PCL008864, PCL009780, PCL011251, PCL011668, PCL013171, PCL014407, PCL014408
SP3_Archive_Polygons	250 m	Yes	2	PCL011252, PCL012843
Sites_Archive_Polylines	0 m	No	0	
Sites_Archive_Points	0 m	No	0	
NLC_Private_Water_Supplies	0 m	No	0	
Closed Landfills	0 m	Yes	1	LF58 b

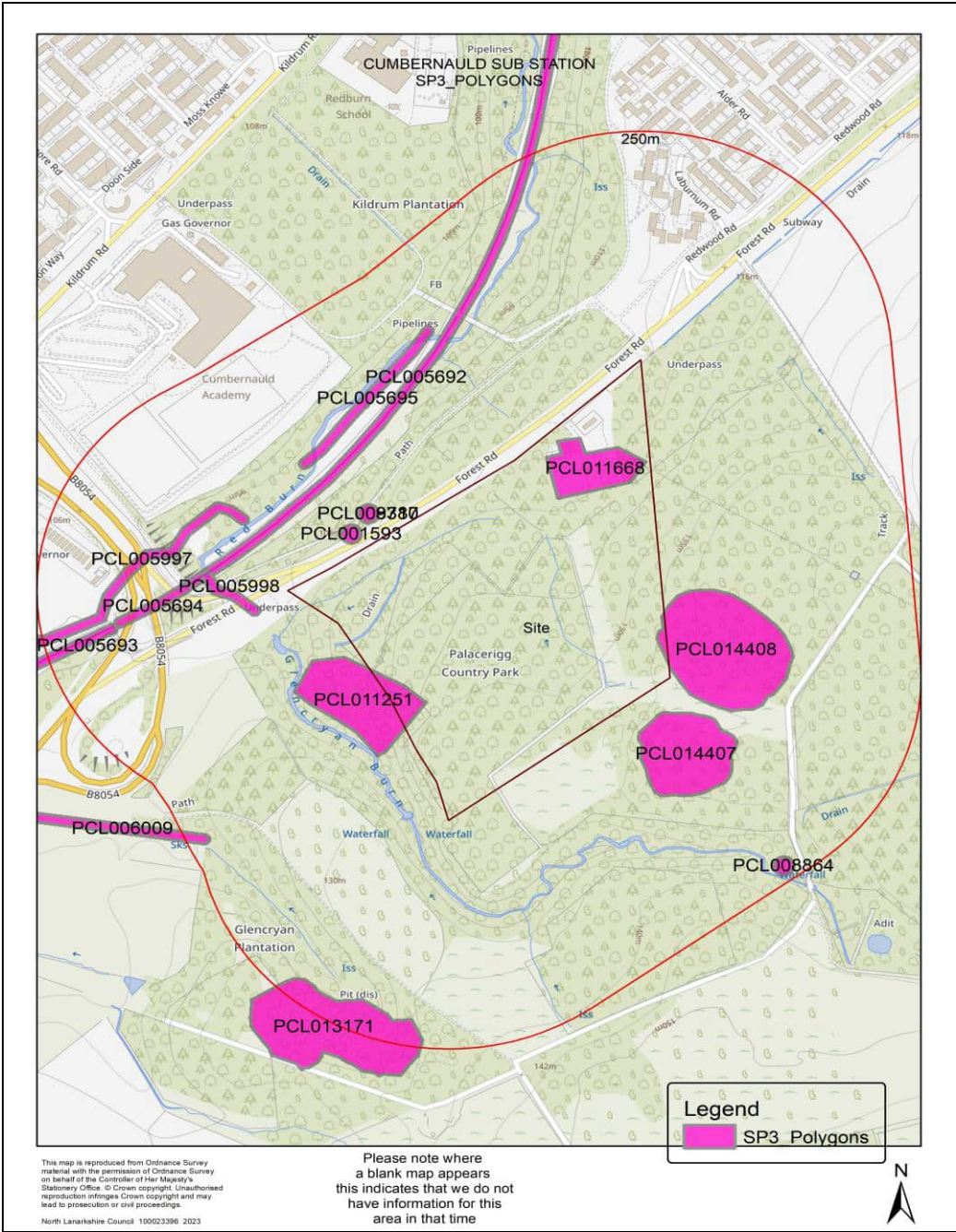
Date: 03 November 2025

Site Name: Cumbernauld sub station

Site Location Map; this section contains site location maps.



Layer Name: SP3_Polygons



GIS Attribute Data for SP3_Polygons

Selection Summary for layer

3 feature(s) identified on site.

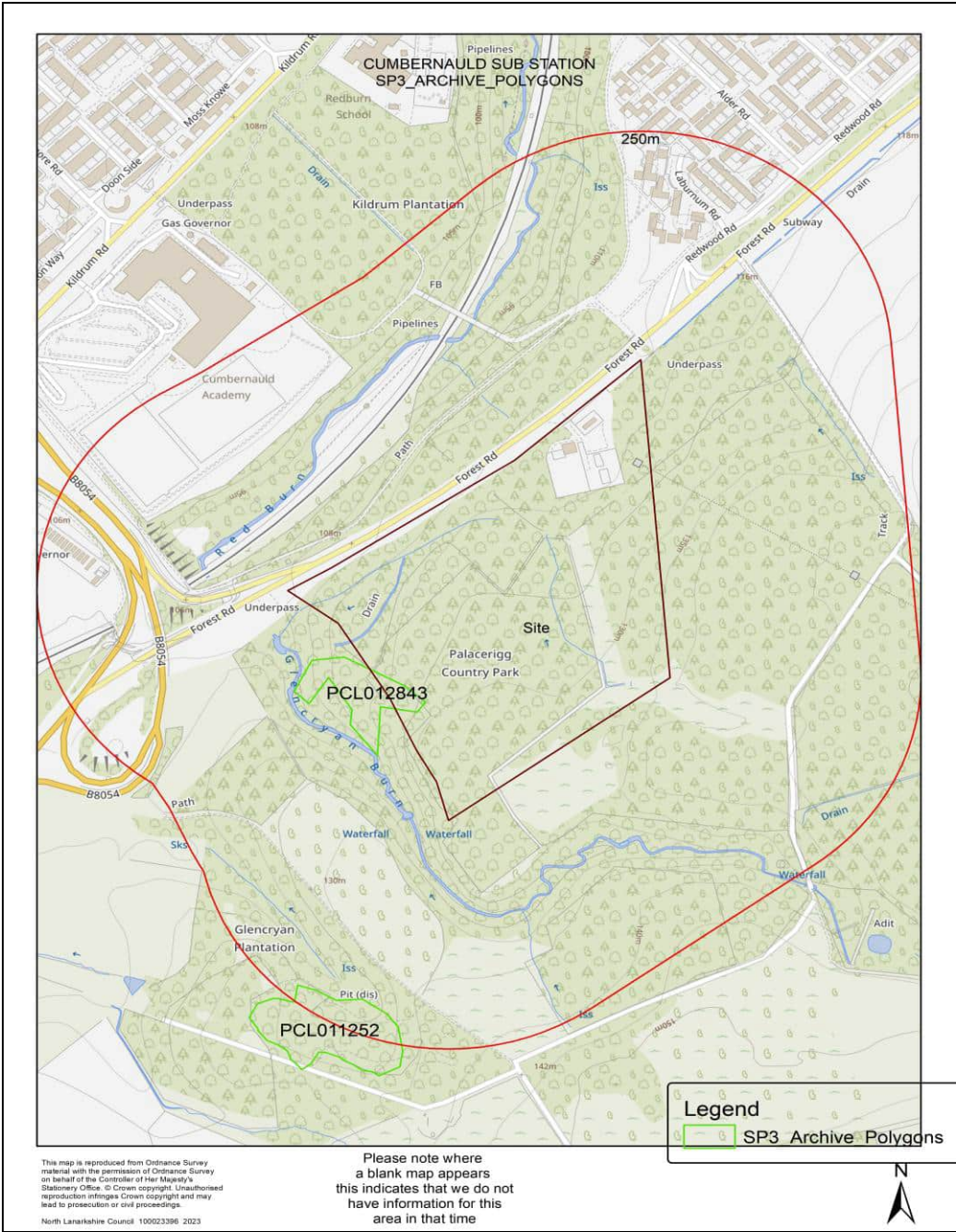
13 feature(s) identified off site within 250 meters

id	contaminative use	Approx. distance (m)	Approx. Area (m2)	Grid Ref.
On Site				
PCL011251	Mining & quarrying general	0.00	7417	277231, 674145
PCL011668	Electricity production & distribution [inc large transformers]	0.00	3884	277460, 674399
PCL014408	Waste: Landfills and other waste treatment & disposal sites	0.00	12842	277593, 674200
Identified Off-site - Within 250m				
PCL001593	Historical Mine Shafts	10.68	312	277222, 674327
PCL005692	Railway land	58.73	10383	277332, 674692
PCL005693	Railway land	175.11	24675	276001, 673495
PCL005694	Railway land	96.49	845	277024, 674249
PCL005695	Pipelines [transport via]	105.77	1987	277238, 674475
PCL005997	Unknown Filled Ground (Pond, marsh, river, stream, dock etc)	85.13	4188	276957, 674258
PCL005998	Unknown Filled Ground (Pond, marsh, river, stream, dock etc)	34.42	710	277100, 674261
PCL006009	Unknown Filled Ground (Pond, marsh, river, stream, dock etc)	227.59	2231	276969, 674008
PCL008317	Mining & quarrying general	20.16	312	277239, 674349
PCL008864	Sewage works and sewage farms	222.99	312	277653, 673964
PCL009780	Unknown Filled Ground (Pit, quarry etc)	20.16	312	277239, 674349
PCL013171	Unknown Filled Ground (Pit, quarry etc)	213.40	11523	277203, 673784
PCL014407	Waste: Landfills and other waste treatment & disposal sites	25.81	7032	277555, 674086

Date: 03 November 2025

Site Name: Cumbernauld sub station

Layer Name: SP3_Archive_Polygons



GIS Attribute Data for SP3_Archive_Polygons

Selection Summary for layer

1 feature(s) identified on site.

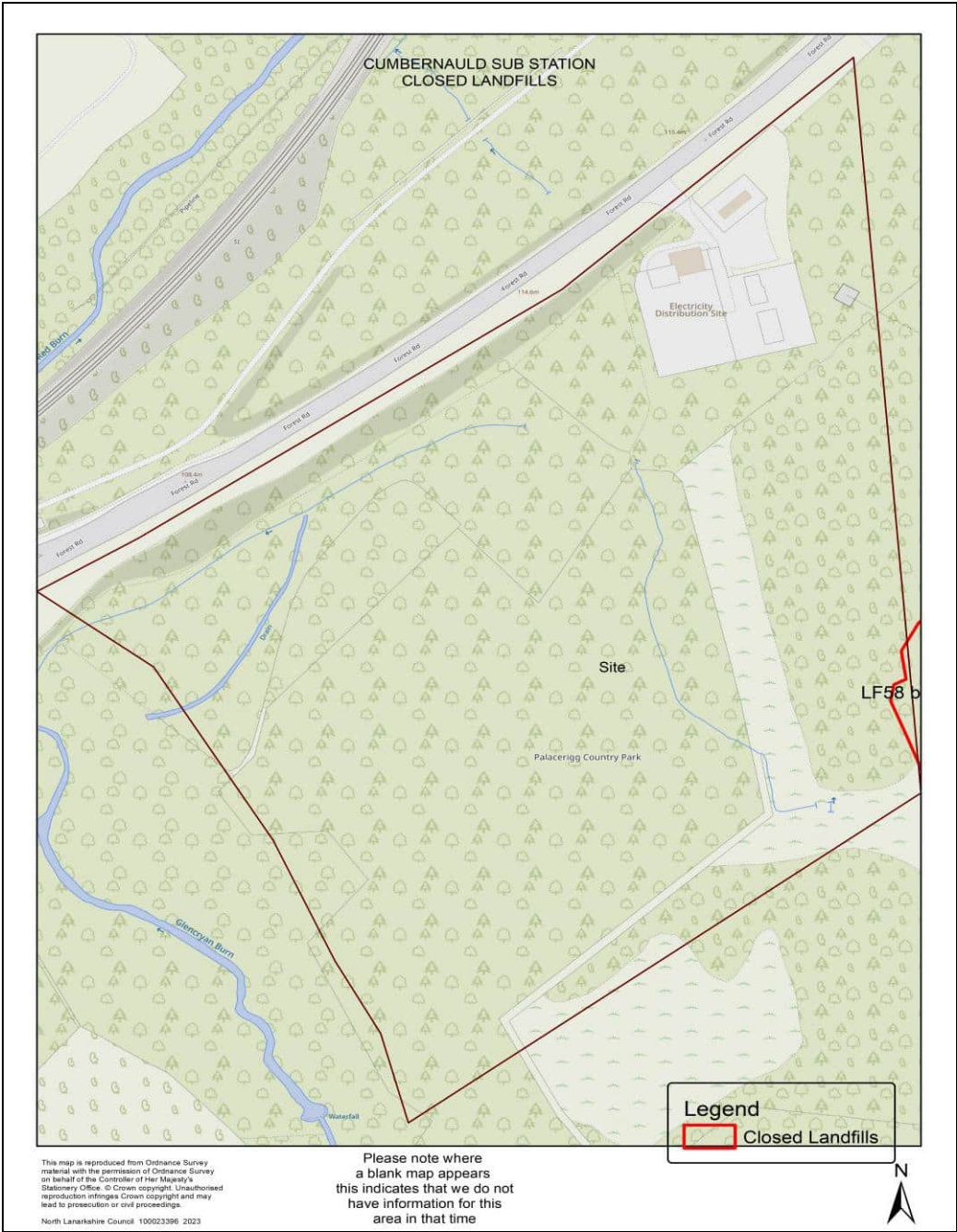
1 feature(s) identified off site within 250 meters

id	contaminative use	Grid Ref.
On Site		
PCL012843	Unknown Filled Ground (Pit, quarry etc)	277230, 674152
Identified Off-site - Within 250m		
PCL011252	Mining & quarrying general	277202, 673783

Date: 03 November 2025

Site Name: Cumbernauld sub station

Layer Name: Closed Landfills



GIS Attribute Data for Closed Landfills

Selection Summary for layer
1 feature(s) identified on site.

GIS	Grid Ref.
On Site	
LF58 b	277593, 674200

End of report

End of Detailed Report

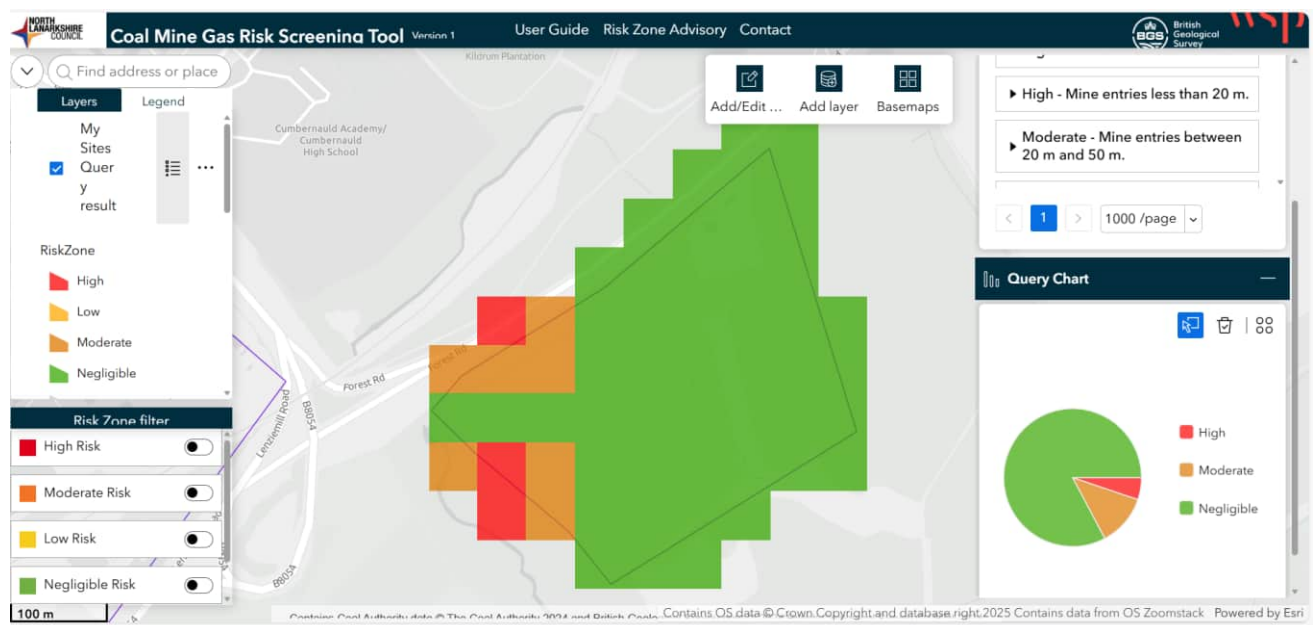


Mine Gas Risk Assessment

Forrest Road Substation

High Risk Zone sites lie within a Mining Remediation Authority (MRA) Coal Mining Reporting Area where at least one of the following conditions is also true: mine entry present on or within 20m of the site; workings <30m below the site and are unflooded or have variable groundwater levels (not permanently flooded); the site lies within an area of past or probable shallow workings; or faults or other pathways connecting the surface to deeper unflooded workings are present.

Detailed mine gas assessment is likely to be required per CL:AIRE 2021 (See Figure 13.1 Note 3).



Coal Mine Gas Risk Advisory Statements

March 2025

Document Purpose

In 2023, North Lanarkshire Council (NLC) instructed WSP UK Limited (WSP) and the British Geological Survey (BGS) to develop a decision support tool (DST) to conduct early-stage risk screening of the potential for ground gases to migrate to surface from former coal mines in North Lanarkshire. The mine gas DST is hosted in a web-based geographical information system (GIS) and is intended to support NLC in giving standardised advice to developers/consultants on the degree of investigation and risk assessment likely to be required for sites to enable formulation and discharge of planning conditions and building warrants. The tool will also be used internally at NLC to support strategic land use planning and development by providing evidence on areas that may be affected by former coal mining and the associated gases present in the ground. The tool must not be used and is not applicable in relation to mineral stability risk assessments, or for assessing gas risks natural emissions from non-coal related geological sources.

The purpose of this document is to present standard advice for five mine gas risk zones presented in 'Good Practice for Risk Assessment for Coal Mine Gas Emissions' (CL:AIRE, 2021).

The mine gas risk DST, and any recommendations issued by NLC based on the mine gas risk DST and this document, do not supersede the need for a phased approach to risk assessment and management arising from former land uses such as coal mining. The approach taken in the DST is consistent with national guidance on the subject, providing a consistent approach to advice on the early-stage screening of mine gas risk in NLC's area.

This document is designed to be used in conjunction with the mapped outputs from the mine gas risk DST and any associated supporting advice or documentation provided by NLC to internal or external clients.

Risk Zone Advisories

The Risk Zone advisories presented herein are based on the five mine gas risk zone categories presented by CL:AIRE (2021) (no risk, negligible, low, moderate, high).

The CL:AIRE (2021) criteria for each risk zone has been developed by the DST project team into GIS risk zone rulesets and applied in the web-based DST. The following publicly available BGS and Mining Remediation Authority (MRA) datasets are used in the DST:

1. Coal Mining Reporting Area (MRA)
2. Mine entries (MRA)
3. Shallow workings (MRA)
4. Probable shallow workings (MRA)
5. Underground workings (MRA)
6. Depth to groundwater (BGS)
7. Geological faults or disturbances (BGS and MRA)
8. Permeability of superficial geology (BGS)

9. Thickness of superficial geology (BGS)

10. Borehole records (BGS)

The DST has been created using the most up to date authoritative data available from reputable sources and will be periodically updated to ensure ongoing data capture.

It should be noted that all of the risk zones assigned based on the DST contain associated uncertainties and assumptions. These risk zones should not be used as a substitute for risk assessors applying judgement and making decisions themselves. Therefore, in all instances risk assessors must confirm the preliminary risk zone classification as appropriate for their site utilising site-specific data (e.g., CSM, private historical ground investigation data not included in the DST dataset). Where risk assessors feel that the preliminary risk screening of the DST is not reflective of site risks due to site-specific data then this must be robustly argued via a lines of evidence approach, with all supporting evidence provided. NLC/BGS/WSP will not accept any liability for misapplication of Risk Zone classifications. Further information on the datasets used in creation of the DST and associated assumptions/uncertainties is available in the Data Catalogue.

Please also note that WSP and the BGS have undertaken additional research into the use of the BGS groundwater dataset in the tool and its reliability, specifically in relation to the risk of false negatives for Risk Zones which rely on depth to groundwater. Comparison with available third-party monitoring data in bedrock installations has been delivered, and statistical and spatial analysis completed. No obvious controls (e.g., geological, spatial etc) on groundwater distribution were observed and groundwater appears only to be controlling the Risk Zone assignment at >40m bgl and where workings are present 30-150m bgl. False negatives however are not considered likely given the minimum depth to workings over Low Risk Zones in these areas ranged from 53 to 147m bgl, and in each case were much deeper than respective modelled or observed depth to groundwater.

No Risk Zone

No Risk Zone does not fall within a Mining Remediation Authority (MRA) Coal Mining Reporting Area. No Risk Zones generally require no further assessment of mine gas risks.

Negligible Risk Zone

Negligible Risk Zone sites lie within a Mining Remediation Authority (MRA) Coal Mining Reporting Area. There are no mine entries present within 50m of the site boundary, and no mine workings are present within 150m below ground level. If deeper workings are present >150m below ground level, then these are permanently flooded and/or not connected to the surface by a potential preferential pathway (e.g., records of boreholes or geological faults).

It is likely that no further mine gas risk assessment or mitigation is required if a site is within a Negligible Risk Zone.

Findings should be detailed in an assessment report which should include development of an initial schematic conceptual site model (CSM) in line with CL:AIRE 2021 recommendations (See Figure 13.1 Note 1), and other national guidance.

Summary of Negligible Risk Zone data and conditions:

1. Within a Coal Mining Reporting Area; AND
2. Not within 50m of any mine entries (shaft, adit); AND
3. No workings between 30m and 150m deep; AND
4. No unflooded coal workings >150m deep (underground workings and depth to groundwater) connected to the surface by a potential preferential pathway (geological faults and boreholes); AND
5. No past or probable shallow coal workings.

Low Risk Zone

Low risk zone sites lie within a Mining Remediation Authority (MRA) Coal Mining Reporting Area with no mine entries within 50 m of the site boundary. Workings are or may be present between 30m and 150m depth but are permanently flooded or covered by 10m+ of low permeability superficial deposits.

Findings should be detailed in an assessment report which should include development of an initial schematic conceptual site model (CSM) in line with CL:AIRE 2021 recommendations (See Figure 13.1 Note 1), and other national guidance.

Findings must be reviewed once development design is finalised. Low Risk Zones mean that mitigation is unlikely to be required.

Summary of Low Risk Zone data and conditions:

1. Within a Coal Mining Reporting Area; AND
2. Not within 50m of any mine entries (shaft, adit); AND
3. No past or probable shallow coal workings; AND
4. No unflooded coal workings >150m deep (underground workings and depth to groundwater) connected to the surface by a potential preferential pathway (geological faults and boreholes); AND
5. Any workings that are present between 30m and 150m bgl must be flooded (depth to groundwater) or covered by >10m of low permeability deposits (superficial thickness and superficial permeability).

Moderate Risk Zone

Moderate Risk Zone sites lie within a Mining Remediation Authority (MRA) Coal Mining Reporting Area and have mine entries present between 20m and 50m of the site, or unflooded workings present between 30m and 150m depth that are not covered by 10m or more low permeability superficial deposits.

Detailed mine gas assessment is likely to be required per CL:AIRE 2021 (See Figure 13.1 Note 3).

Additional investigation/assessment should be carried out by competent person/s, per CL:AIRE 2021 recommendations, and should seek to address uncertainties associated with the risk screening assigned. Such should include both desk-based research and intrusive site investigations to confirm ground conditions (where possible), and would be likely to include consideration of the following:

1. The extent, connectivity, and age of any recorded workings beneath the site, and the method by which these were worked (to inform likely gassing status and likelihood of fracturing);
2. Whether any previous grouting has taken place and whether such was undertaken to mitigate gas risk or stability risks;
3. The presence, location and condition of mine entry / adit details (e.g., type, depth, dip and direction);
4. The presence, composition, thickness, extent and permeability of superficial deposits;
5. The depth to rockhead and characterisation of geology;
6. The depth to potential workings and the thickness and permeability of overlying bedrock (including records of fractures and faults);
7. The depth to groundwater (strikes and resting), including temporal and climatic fluctuations;
8. Mine gas monitoring using continuous monitoring and/ or flux box data or other alternative data collection methods as suited to site-specific requirements; and
9. Mine gas data evaluation which may include a range of techniques such as modelling and/or Ternary plots.

Investigations should be site-specific and should be combined with multiple lines of evidence to form part of the mine gas risk assessment, per CL:AIRE 2021 guidance. The assessment should also account for development-specific factors and uncertainties, such as final site levels, foundation designs, requirements for grouting (below the site or nearby in associated workings), potential preferential pathways, and other foreseeable changes including those related to climate change. Reference should be made to the CL:AIRE 2021 report for additional guidance and requirements of the mine gas risk assessment as the above is only an example of some of the acceptable lines of evidence that would be expected, and other things may also be accepted

or required. We caution that spot gas monitoring results alone will not be accepted as proof of lower risk and multiple lines of evidence must be presented to support assessments.

Findings should be detailed in an assessment report which should include development of an initial schematic conceptual site model (CSM) in line with CL:AIRE 2021 recommendations (See Figure 13.1 Note 1), and other national guidance. Risk-based mitigation design should be implemented. The assessment must be reviewed once the development designs are finalised.

Summary of Moderate Risk Zone data and conditions:

1. Within a Coal Mining Reporting Area; AND
2. Within 20m and 50m of any mine entries (shaft, adit); OR
3. Not within an area of past or probable shallow coal workings; OR
4. No unflooded coal workings (underground workings and depth to groundwater) connected to the surface by a potential preferential pathway (geological faults and boreholes); OR
5. Any workings that are present between 30m and 150m bgl are unflooded (depth to groundwater) and not covered by 10m or more of low permeability superficial deposits (superficial thickness and superficial permeability).

High Risk Zone

High Risk Zone sites lie within a Mining Remediation Authority (MRA) Coal Mining Reporting Area where at least one of the following conditions is also true: mine entry present on or within 20m of the site; workings <30m below the site and are unflooded or have variable groundwater levels (not permanently flooded); the site lies within an area of past or probable shallow workings; or faults or other pathways connecting the surface to deeper unflooded workings are present.

Detailed mine gas assessment is likely to be required per CL:AIRE 2021 (See Figure 13.1 Note 3).

Additional investigation/assessment should be carried out by competent person/s, per CLAIRE 2021 requirements, and should seek to address uncertainties associated with the risk screening assigned. Such should include both desk-based research and intrusive site investigations to confirm ground conditions (where possible) and would be likely to include consideration of the following:

1. The extent, connectivity, and age of any recorded workings beneath the site, and the method by which these were worked (to inform likely gassing status and likelihood of fracturing);
2. Whether any previous grouting has taken place and whether such was undertaken to mitigate gas risk or stability risks;
3. The presence, location and condition of mine entry / adit details (e.g., type, depth, dip and direction);
4. The presence, composition, thickness, extent and permeability of superficial deposits;

5. The depth to rockhead;
6. The depth to potential workings and the thickness and permeability of overlying bedrock (including records of fractures);
7. The depth to groundwater (strikes and resting), including fluctuations;
8. Mine gas monitoring using continuous monitoring and/or flux box data or other alternative data collection methods as suited to site-specific requirements; and
9. Mine gas data evaluation which may include a range of techniques such as modelling and / or Ternary plots.

Investigations should be site-specific and should be combined with multiple lines of evidence to form part of the mine gas risk assessment, per CL:AIRE 2021 guidance. The assessment should also account for development-specific factors and uncertainties, such as final site levels, foundation designs, requirements for grouting (below the site or nearby in associated workings), potential preferential pathways, and other foreseeable changes including those related to climate change. Reference should be made to the CL:AIRE 2021 report for additional guidance and requirements of the mine gas risk assessment as the above is only an example of some of the acceptable lines of evidence that would be expected, and other things may also be accepted or required. We caution that spot gas monitoring results alone will not be accepted as proof of lower risk and multiple lines of evidence must be presented to support assessments.

Findings should be detailed in an assessment report which should include development of an initial schematic conceptual site model (CSM) in line with CL:AIRE 2021 recommendations (See Figure 13.1 Note 1), and other national guidance. Risk-based mitigation design should be implemented. The assessment must be reviewed once the development designs are finalised.

Summary of High Risk Zone data and conditions:

1. Within a Coal Mining Reporting Area; AND
2. Within 20m of any mine entries (shaft, adit); OR
3. Within an area of past or probable shallow coal workings; OR
4. Unflooded coal workings (underground workings and depth to groundwater) are connected to the surface by a potential preferential pathway (geological faults and boreholes);

RESPONSE TO F0199794

Request Timeline

Date	Status
05/08/2025	EIR Request received [statutory deadline 02/09/2025]
06/08/2025	Clarification requested
06/08/2025	Clarification received [statutory deadline 03/09/2025]
04/09/2025	Late request update email sent
02/10/2025	EIR Response issued

Final Version of Requested Information

[...] Desk Study review of sites proposed for development to the East of Glasgow.

Grid reference and What3Words for the centre of each proposed site is outlined below.

Bonny Bridge Sub Station

- NS 84077 80960
- monument.caused.snap

Wishaw Substation

- NS 79055 54007
- slams.slips.switch

Denny Substation

- NS 82379 84548
- flippers.racing.plan

Cumbernauld Substation

- NS 77438 74228
- active.living.puppy

We would be grateful if you or someone in your team would examine your available records and inform us of any information relating to potentially contaminated land within the site and nearby area.

Information we would be looking for includes the following:

1. any recorded, current or historical environmental problems at the site and adjacent areas with regards to ground contamination or solid waste arisings; 750m radius
2. any private or public groundwater abstractions on or within of the site boundary;
3. the presence and location of any historical landfills within 250m of the site boundary;
4. any particular areas of sensitivity in the vicinity of the site or nearby areas for which the council may have particular concern; 750m radius
5. any other relevant environmental information you may hold about the site. 750m radius. Regarding the date, as far back as you can go would be great. Realistically, anything within the last 10 – 15 years.

Response

We confirm that we have handled your request under the terms of the Environmental Information (Scotland) Regulations 2004 (EIRs).

We apologise for the delay in providing this response.

For full clarification history please refer to the Clarification section below.

Q	Response	Data Reuse
[1]	Any recorded, current or historical environmental problems at the site and adjacent areas with regards to ground contamination or solid waste arisings; 750m radius. There are no Special sites at these locations or within a 750m radius of them. Special sites are a specific sub-set of Part IIA contaminated land for which SEPA becomes the lead regulator. For all other information on potential historic contaminated land please contact Falkirk and North Lanarkshire Councils who are the lead regulators for both the Part IIA contaminated land regime and contamination issues under planning and development. Contact details are provided in 'Application of Regulation/Exceptions' section below <u>Exceptions/Regulations Applied:</u> Regulation 10(4)(a) – Information not held Regulation 14(1)(b) – Other Authority	In cases where no information is held, data reuse does not apply

Q	Response	Data Reuse
[2]	Any private or public groundwater abstractions on or within 250m of the site boundary. We hold no surface or groundwater abstractions within 250m of the search areas requested. Please note: - As a result of losing access to much of our Public Register documentation in December 2020, documentation from before 1 January 2021 is not always complete or verified. We are providing you with the best available information. Any use you make of this information will be at your own risk. - Private drinking water supply abstractions of 10m³ or less are covered by a General Binding Rule (GBR). As compliance with the GBR is mandatory and no formal SEPA authorisation or registration is required, we do not hold a record of these. It is the responsibility of the local authority to maintain a register of private drinking water supplies, and we suggest you contact Falkirk and North Lanarkshire Council for this information. Contact details are provided in 'Application of Regulation and Exceptions' section below.	In cases where no information is held, data reuse does not apply.

Q	Response	Data Reuse
	In the interest of public safety, we cannot disclose the locations of public drinking water supply abstractions. <u>Exceptions/Regulations Applied:</u> Regulation 9 – Advice and Assistance Regulation 10(4)(a) – Information not held Regulation 14(1)(b) – Other Authority Regulation 10(5)(a) – International relations, national security, public safety	
[3]	The presence and location of any historical landfills within 250m of the site boundary. There are no operational landfills within 250m of the sites requested. SEPA also holds no information on historical landfills within any of the search radii requested. We only hold information on landfill sites that still hold a Waste Management Licence or Pollution Prevention & Control Permit.	In cases where no information is held, data reuse does not apply.

Q	Response	Data Reuse
	We do not hold information on landfill sites where the site was closed, and the licence handed back to the local authority pre-1996. Such information may be held by the local authority's contaminated land officer. We advise you contact Falkirk and North Lanarkshire Council for any information they may hold. Their contact details are provided in the Application of Regulations/Exceptions section below. <u>Exceptions/Regulations Applied:</u> Regulation 10(4)(a) – Information not held Regulation 14(1)(b) – Other Authority	
[4]	Any particular areas of sensitivity in the vicinity of the site or nearby areas for which the council may have particular concern; 750m radius. There are no particular areas of sensitivity in the vicinity of the site or nearby areas for which we have particular concern. To check if there are protected areas near your sites of interest, we suggest you visit – ○ www.sepa.org.uk/environment/water/monitoring/protected-areas/	In cases where no information is held, data reuse does not apply.

Q	Response	Data Reuse
	○ sitelink.nature.scot/map or contact NatureScot, www.nature.scot/about-naturescot/contact-us for any additional information <u>Exceptions/Regulations Applied:</u> Regulation 9 – Advice and Assistance Regulation 10(4)(a) – Information not held	
[5]	Any other relevant environmental information you may hold about the site. 750m radius. Regarding the date, as far back as you can go would be great. Realistically, anything within the last 10 – 15 years. Please refer to attached pollution events for Bonnybridge Substation, Cumbernauld Substation and Denny Substation. We do not hold any events for Wishaw Substation: • EE Bonnybridge Substation_RR • EE Cumbernauld Substation_RR • EE Denny Substation_RR • 20250929_Official_Events_RR	This data is licenced under the current Open Government Licence: www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Q	Response	Data Reuse
	North Lanarkshire Council are looking to demolish the Allershaw tower block (circled red below). SEPA planning were working on a planning consultation for this due to the presence of low level radioactive waste, a legacy from a previous clock factory that produced dashboard equipment. Planning application numbers (taken from GIS Planning layer): <u>View and comment on planning applications North Lanarkshire Council</u> • 25/00609/PRN, • 21/00982/PPP • 21/00982/PPP 	

Q	Response	Data Reuse
	<u>Exceptions/Regulations Applied:</u> Regulation 6(1)(b) - Publicly Available Regulation 11(2) – Personal Data	

Application of Regulations and Exceptions

Section 39(2)

The information you are requesting is environmental information. We have applied Section 39(2) of the Freedom of Information (Scotland) Act 2002 (FOISA). We are therefore handling your request under the Environmental Information (Scotland) Regulations 2004 (EIRs).

Regulation 6(1)(b) Publicly available & easily accessible

As we have advised that information is publicly available & easily accessible we have applied Regulation 6(1)(b), the text of which is reproduced below.

*6(1) Where an applicant requests that environmental information be made available in a particular form or format, a Scottish public authority shall comply with that request unless-
(b) the information is already publicly available and easily accessible to the applicant in another form or format.*

Regulation 9 – Advice and assistance

As we have issued additional information, advice, or assistance we have applied Regulation 9(1) of the EIRs, the text of which is reproduced below.

9(1) A Scottish public authority shall provide advice and assistance, so far as it would be reasonable to expect the authority to do so, to applicants and prospective applicants.

Regulation 10(4)(a) – Information not held

Where we have advised that we do not hold information we have applied Regulation 10(4)(a) of the EIRs, the text of which is reproduced below.

10 (4) A Scottish public authority may refuse to make environmental information available to the extent that;- (a) it does not hold that information when an applicant's request is received.

The exception in Regulation 10(4)(a) is subject to the public interest test in Regulation 10(1)(b) of the EIRs. As SEPA does not hold the information in question there is no conceivable public interest in requiring that the information be made available.

Regulation 10(5)(a) – International relations, national security, public safety

The locations of public drinking water supply abstractions are withheld from release under the terms of Regulation 10(5)(a) of the EIRs, the text of which is reproduced below.

10 (5) A Scottish public authority may refuse to make environmental information available to the extent that its disclosure would, or would be likely to, prejudice substantially, (a) international relations, defence, national security or public safety;

A public interest test was carried out in relation to this exemption. We acknowledge that there is a presumption in favour of disclosure under Regulation 10(2)(b) of the EIRs and that SEPA is a taxpayer funded public body with a duty to be open and transparent.

It is not in the public interest, however, for SEPA to release information, such as the location of public drinking water supplies, which would be likely to prejudice substantially public safety.

On balance, we consider that the public interest in releasing the information is outweighed by the public interest in maintaining the exception and therefore the information is withheld under Regulation 10(5)(a) of the EIRs.

Regulation 11(2) – Personal data

Personal data relating to SEPA staff and private individuals has been redacted from the released documents in accordance with Regulation 11(2) of the EIRs and Data Protection Principles.

We have not withheld complete documents which contain such personal data and have released all other information within the document.

Regulation 14(1)(b) – Other authority

As we do not hold the information requested, but believe that another organisation may, Regulation 14(1)(b) of the EIRs applies. The text of which is reproduced below.

14(1) Where a Scottish public authority has received a request to make environmental information available and does not hold that information but believes that another public authority holds the information requested then it shall (b) supply the applicant with the name and address of that other authority,

Contact details:

Information Team

Falkirk Council

Suite 3.2, The Forum

Callendar Business Park

Falkirk

FK1 1XR

foi@falkirk.gov.uk

www.falkirk.gov.uk/services/council-democracy/access-to-information/freedom-of-information/

North Lanarkshire Council

Freedom of Information

Legal and Democratic Solutions

Civic Centre

Windmillhill Street

Motherwell ML1 1AB

foirequest@northlan.gov.uk

www.northlanarkshire.gov.uk/your-council/managing-information/freedom-information

Clarification

Requested Information

[...] Desk Study review of sites proposed for development to the East of Glasgow.

Grid reference and What3Words for the centre of each proposed site is outlined below.

Bonny Bridge Sub Station

- NS 84077 80960
- monument.caused.snap

Wishaw Substation

- NS 79055 54007
- slams.slips.switch

Denny Substation

- NS 82379 84548
- flippers.racing.plan

Cumbernauld Substation

- NS 77438 74228
- active.living.puppy

We would be grateful if you or someone in your team would examine your available records and inform us of any information relating to potentially contaminated land within the site and nearby area.

Information we would be looking for includes the following:

1. any recorded, current or historical environmental problems at the site and adjacent areas with regards to ground contamination or solid waste arisings;

2. any private or public groundwater abstractions on or within 250m of the site boundary;
3. the presence and location of any historical landfills within 250m of the site boundary;
4. any particular areas of sensitivity in the vicinity of the site or nearby areas for which the council may have particular concern;
5. any other relevant environmental information you may hold about the site.

Clarification Requested

Please can you provide a radius you wish us to search

Clarification Received

Can you please complete your search using a 750m radius from the What3Words location?

Regarding the date, as far back as you can go would be great. Realistically, anything within the last 10 – 15 years.

What to expect when making a Request for Information

Each request for information, under The Environmental Information (Scotland) Regulations 2004 or the Freedom of Information (Scotland) Act 2002, is formally logged by the authority. The request falls within a process that has two internal stages carried out by the authority; a right of appeal to the Scottish Information Commissioner followed by an appeal to the Court of Session on a point of law only.

- Stage 1 – Request for information
- Stage 2 – Formal Review
- Stage 3 – Appeal for decision by Scottish Information Commissioner (OSIC)
- Stage 4 – Appeal to the Court of Session on a point of law only.

Each enquiry will have a unique Reference Number which should be quoted when you contact us.

How you will be kept informed

You will receive an acknowledgement for your request and Formal Review. We aim to reply to all enquiries promptly, within 20 working days. You will receive a response along with the requested information and/or an explanation regarding any withheld information. We may also contact you if we require clarification or if we are issuing a fees notice.

What happens once your enquiry has been responded to?

If you are not happy with the response or have failed to receive a response, you have the right to request a Formal Review from SEPA.

Guidance on your rights and how to ask for a review is on the Scottish Information Commissioner's website; www.foi.scot/asking-for-a-review

We will ensure that all personal data is processed, recorded and retained in accordance with the requirements of the Data Protection Act 2018 throughout the handling of each request. You have a right to see information about yourself via submitting a Subject Access Request under the Data Protection Act 2018.

What to do if you are not happy with how your enquiry and review were handled

If you are unsatisfied with our Formal Review response or have failed to receive a response, you can then appeal to the Scottish Information Commissioner via the links below.

www.foi.scot/appeal

www.foi.scot/contact-us

Should you wish to appeal against the Scottish Information Commissioner's decision, you have the right to appeal to the Court of Session on a point of law only. Any such appeal must be made within 42 days after the date of intimation of the decision.

Appendix H Zetica UXO Risk Mapping / Preliminary UXO Desktop Report

PA024217 — CUMBERNAULD SUBSTATION

DOCUMENT DETAILS

Site name:	Cumbernauld Substation		
Reference:	PA024217	Client:	AECOM
Date:	12 th August 2025	Contact:	Nathan van Maanen

RECOMMENDATION

While always prudent, a detailed desk study is not considered essential in this instance.

SUMMARY OF FINDINGS

Military Activity	No significant military activity affecting the Site has been identified.
WWI Bombing	Potential targets within approximately 5km of the Site: ▪ Transport infrastructure and public utilities. ▪ Munitions factories and engineering works. No readily available records have been found indicating that the Site was bombed.
WWII Bombing	The Site was located in Dumbartonshire Landward Area (LA), which officially recorded 1,236No. High Explosive (HE) bombs, with a density of 8.4 bombs per 405 hectares (ha). Potential targets within approximately 5km of the Site: ▪ Transport infrastructure and public utilities. ▪ Engineering and metal works. ▪ Anti-Aircraft (AA) and anti-invasion defences. No readily available records have been found indicating that the Site was bombed.
Bombing Decoys	None identified within 5km of the Site.

FURTHER INFORMATION

These findings are based on a cursory review of readily available records; caution is advised if you plan to action work based on this PDSA.

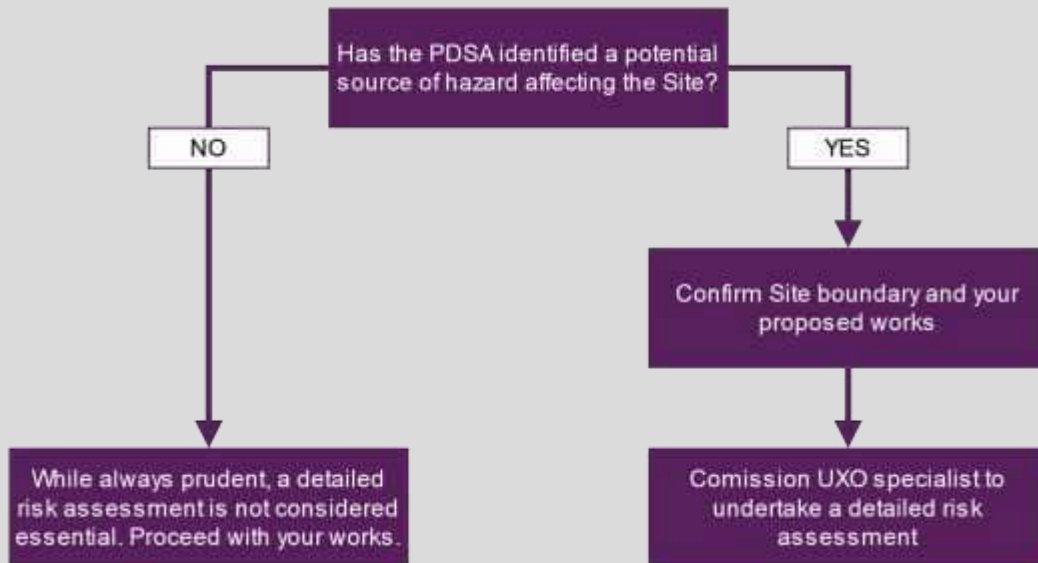
Where a potentially significant UXO hazard source has been identified on the Site, no further research has been undertaken. A detailed UXO desk study and risk assessment may identify other potential UXO hazard sources on the Site.

Visit www.zeticauxo.com to learn more about Zetica's detailed UXO desk studies and other UXO services. Click [here](#) for more information about the most common UXO hazard sources in the UK.

If you have any further queries, please don't hesitate to contact us at uxo@zetica.com or 01993 886 682.

NEXT STEPS

Follow the steps below to determine the appropriate course of action:



Potential UXO hazard identified? If the PDSA has identified a potential source of UXO hazard affecting your site, then a detailed UXO risk assessment is recommended.

No obvious source of UXO hazard? If the PDSA has not identified any obvious source of potential UXO, works can proceed.

It is good practice to raise awareness of the background UXO risk in the UK as part of a standard site induction. This will ensure that appropriate action is taken in the unlikely event that UXO is discovered.

Don't skip a stage: If you skip the detailed risk assessment stage, you could end up undertaking unnecessary work (e.g. trying to detect a UXO hazard that has already been removed).

Similarly, a detailed risk assessment might find that the UXO hazard is worse than expected and has a greater potential to cause harm, requiring a different mitigation approach than would otherwise be undertaken.

